# COLOR MONITOR

SyncMaster 330TFT
SyncMaster 530TFT
SyncMaster 331TFT
SyncMaster 531TFT

# SERVICE Manual

## COLOR MONITOR

## CONTENTS

1. Precautions
2. Reference Information
3. Product Specifications
4. Operating Instructions
5. Disassembly & Reassembly
6. Troubleshooting
7. Exploded View & Parts List
8. Block Diagram
9. Electrical Parts List
10. PCB Diagrams
11. Wiring Diagram
12. Schematic Diagrams

Samsung Electronics Co., Ltd. July 1998
Printed in Korea
Code No.: BN68-60017A

# 1 Precautions

Follow these safety, servicing and ESD precautions to prevent damage and to protect against potential hazards such as electrical shock.

## 1-1 Safety Precautions

### 1-1-1 Warnings

1. For continued safety, do not attempt to modify the circuit board.
2. Disconnect the AC power and DC Power Jack before servicing.
3. When the chassis is operating, semiconductor heatsinks are potential shock hazards.

### 1-1-2 Servicing the LCD Monitor

1. When servicing the LCD Monitor, remove the static charge by connecting a 10k ohm resistor in series with an insulated wire (such as a test probe) between the chassis and the anode lead. (Disconnect the AC line cord from the AC outlet.)
2. It is essential that service technicians have an accurate voltage meter available at all times. Check the calibration of this meter periodically.

### 1-1-3 Fire and Shock Hazard

Before returning the monitor to the user, perform the following safety checks:

1. Inspect each lead dress to make certain that the leads are not pinched or that hardware is not lodged between the chassis and other metal parts in the monitor.
2. Inspect all protective devices such as nonmetallic control knobs, insulating materials, cabinet backs, adjustment and compartment covers or shields, isolation resistor-capacitor networks, mechanical insulators, etc.
3. Leakage Current Hot Check (Figure 1-1): **WARNING: Do not use an isolation transformer during this test.** Use a leakage current tester or a metering system that complies with American National Standards Institute (*ANSI C101.1, Leakage Current for Appliances*), and Underwriters Laboratories (*UL Publication UL1410, 59.7*).

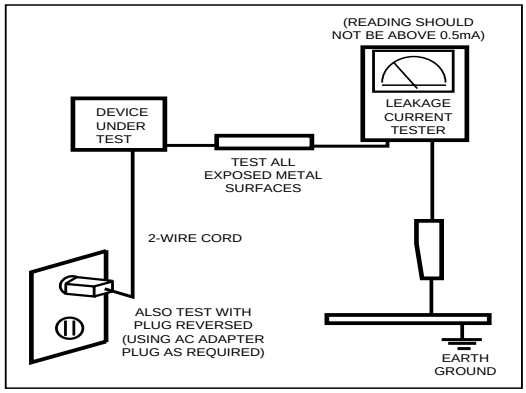



Figure 1-1. Leakage Current Test Circuit

4. With the unit completely reassembled, plug the AC line cord directly into a 120V AC outlet. With the unit's AC switch first in the ON position and then OFF, measure the current between a known earth ground (metal water pipe, conduit, etc.) and all exposed metal parts, including: metal cabinets, screwheads and control shafts. The current measured should not exceed 0.5 milliamp. Reverse the power-plug prongs in the AC outlet and repeat the test.

### 1-1-4 Product Safety Notices

Some electrical and mechanical parts have special safety-related characteristics which are often not evident from visual inspection. The protection they give may not be obtained by replacing them with components rated for higher voltage, wattage, etc. Parts that have special safety characteristics are identified by ⚠ on schematics and parts lists. A substitute replacement that does not have the same safety characteristics as the recommended replacement part might create shock, fire and / or other hazards. Product safety is under review continuously and new instructions are issued whenever appropriate.

## 1-2 Servicing Precautions

**WARNING:** **An electrolytic capacitor installed with the wrong polarity might explode.**

**Caution:** Before servicing units covered by this service manual, read and follow the Safety Precautions section of this manual.

**Note:** If unforeseen circumstances create conflict between the following servicing precautions and any of the safety precautions, always follow the safety precautions.

### 1-2-1 General Servicing Precautions

1. Always unplug the unit's AC power cord from the AC power source and disconnect the DC Power Jack before attempting to:
   (a) remove or reinstall any component or assembly, (b) disconnect PCB plugs or connectors, (c) connect a test component in parallel with an electrolytic capacitor.
2. Some components are raised above the printed circuit board for safety. An insulation tube or tape is sometimes used. The internal wiring is sometimes clamped to prevent contact with thermally hot components. Reinstall all such elements to their original position.
3. After servicing, always check that the screws, components and wiring have been correctly reinstalled. Make sure that the area around the serviced part has not been damaged.
4. Check the insulation between the blades of the AC plug and accessible conductive parts (examples: metal panels, input terminals and earphone jacks).
5. Insulation Checking Procedure: Disconnect the power cord from the AC source and turn the power switch ON. Connect an insulation resistance meter (500 V) to the blades of the AC plug.

   The insulation resistance between each blade of the AC plug and accessible conductive parts (see above) should be greater than 1 megohm.
6. Always connect a test instrument's ground lead to the instrument chassis ground *before* connecting the positive lead; always remove the instrument's ground lead last.

## 1-3 Electrostatically Sensitive Devices (ESD) Precautions

Some semiconductor (solid state) devices can be easily damaged by static electricity. Such components are commonly called Electrostatically Sensitive Devices (ESD). Examples of typical ESD devices are integrated circuits and some field-effect transistors. The following techniques will reduce the incidence of component damage caused by static electricity.

1. Immediately before handling any semiconductor components or assemblies, drain the electrostatic charge from your body by touching a known earth ground. Alternatively, wear a discharging wrist-strap device. To avoid a shock hazard, be sure to remove the wrist strap before applying power to the monitor.
2. After removing an ESD-equipped assembly, place it on a conductive surface such as aluminum foil to prevent accumulation of an electrostatic charge.
3. Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ESDs.
4. Use only a grounded-tip soldering iron to solder or desolder ESDs.
5. Use only an anti-static solder removal device. Some solder removal devices not classified as "anti-static" can generate electrical charges sufficient to damage ESDs.
6. Do not remove a replacement ESD from its protective package until you are ready to install it. Most replacement ESDs are packaged with leads that are electrically shorted together by conductive foam, aluminum foil or other conductive materials.
7. Immediately before removing the protective material from the leads of a replacement ESD, touch the protective material to the chassis or circuit assembly into which the device will be installed.

   **Caution:** Be sure no power is applied to the chassis or circuit and observe all other safety precautions.
8. Minimize body motions when handling unpackaged replacement ESDs. Motions such as brushing clothes together, or lifting your foot from a carpeted floor can generate enough static electricity to damage an ESD.

# 2 Reference Information

## 2-1 List of Abbreviations, Symbols and Acronyms

### 2-1-1 Abbreviations

| Abbreviation | Definition |
|---|---|
| AUTO_MENB | AUTO ENABLE (NEG.) |
| AUTO_SOG | SINK ON GREEN ENABLE |
| BL_EN | LCD PANEL BACK LIGHT ENABLE |
| BRIGHT | BRIGHTNESS CONTROL |
| DAB(7:0) | BLUE COLOR DATA (ODD) FROM IC305 |
| DAG(7:0) | GREEN COLOR DATA (ODD) FROM IC305 |
| DAR(7:0) | RED COLOR DATA (ODD) FROM IC305 |
| DBB(7:0) | BLUE COLOR DATA (EVEN) FROM IC305 |
| DBG(7:0) | GREEN COLOR DATA (EVEN) FROM IC305 |
| DBR(7:0) | RED COLOR DATA (EVEN) FROM IC305 |
| DDC_SCL | DDC I2C CLOCK FROM PC |
| DDC_SDA | DDC I2C DATA FROM PC |
| DEN | LVDS DATA ENABLE |
| DFSYNCB | CONTROL SIGNAL FROM IC301 TO IC305 |
| DHCLK | DOT CLOCK FOR PANEL DRIVING |
| DHS | LVDS HSYNC |
| DREFCLK1 | 67MHz OSC CLK FOR IC305 |
| DV_BLU | OSD BLUE DATA |
| DV_FBK | OSD ENABLE |
| DV_GRN | OSD GREEN DATA |
| DV_RED | OSD RED DATA |
| DVACTIV1B | HSYNC FOR OSD (NEG.) |
| DVCLK | DOT CLOCK FOR OSD |
| DVS | LVDS VSYNC |
| DVSYNCB | VSYNC FOR OSD (NEG.) |
| FSD(47:0) | VIDEO DATA BETWEEN IC301 AND IC302,IC303,IC304 |
| HSYNC_PLL | HSYNC FOR PLL |
| INVERT | INTERLACE CONTROL SIGNAL |
| KEY1 | FUNCTION KEY SIGNAL1 TO MICOM |
| KEY2 | FUNCTION KEY SIGNAL2 TO MICOM |
| LED | LED ON |
| LVDS_DATA | DATA OUTPUT FROM IC310, IC311 |
| LVDS_EN | LVDS ENABLE |
| M_HSYNC | BUFFERED MICOM OUTPUT HSYNC |
| M_HSYNC1 | MICOM OUTPUT HSYNC |
| M_VSYNC | BUFFERED MICOM OUTPUT VSYNC |
| M_VSYNC1 | MICOM OUTPUT VSYNC |
| OSCOUT | BUFFERED 24MHz CLOCK |

| Abbreviation | Definition |
|---|---|
| OSCOUT1 | 24MHz CLOCK |
| PANEL_EN | +12V_PANEL/+5V_PANEL ENABLE |
| PC_BLUE_IN | BLUE COLOR SIGNAL FROM PC |
| PC_GREEN_IN | GREEN COLOR SIGNAL FROM PC |
| PC_HSYNC_IN | HSYNC FROM PC |
| PC_RED_IN | RED COLOR SIGNAL FROM PC |
| PC_VSYNC_IN | VSYNC FROM PC |
| PCBLUE(7:0) | BLUE COLOR DATA FROM IC101 |
| PCCLAMP | BUFFERED VIDEO CLAMP SIGNAL |
| PCCLAMP1 | VIDEO CLAMP SIGNAL |
| PCCLK | PLL CLOCK OUT FOR IC301 |
| PCCLK2 | PLL CLOCK OUT FOR IC405 |
| PCCLK3 | PLL CLOCK OUT FOR IC110 |
| PCGREEN(7:0) | GREEN COLOR DATA FROM ADC(IC101) |
| PCRED(7:0) | RED COLOR DATA FROM IC101 |
| PCVSYNC2 | BUFFERED VSYNC |
| RESETB | RESET (NEG.) |
| RGB_HSYNC | HSYNC FOR MICOM(IC401) |
| RGB_VSYNC | VSYNC FOR MICOM(IC401) |
| SCL | I2C CLOCK |
| SCSB | IC305 ENABLE |
| SDA | I2C DATA |
| SOG_CSYNC | COMPOSITE SYNC FROM SOG |
| SOURCE_PC | SELF RASTER CHECK SIGNAL |
| SPI_MISO | SERIAL INPUT DATA CONTROL |
| SPI_MOSI | SERIAL OUTPUT DATA CONTROL |
| SPI_SCK | SERIAL CLOCK |
| SW_REG_ENB | POWER ON/OFF CONTROL |
| VAIL_CSB | IC301 ENABLE |
| VCBLNKB | CONTROL SIGNAL FROM IC305 TO IC301 |
| VCC | DC 5V FOR MICOM(IC401) |
| VCLREQB | CONTROL SIGNAL FROM IC305 TO IC301 |
| VGABLUE(7:0) | NC |
| VGAGREEN(7:0) | NC |
| VGARED(7:0) | NC |
| VGBBLUE(7:0) | BLUE COLOR DATA FROM IC301 |
| VGBGREEN(7:0) | GREEN COLOR DATA FROM IC301 |
| VGBRED(7:0) | RED COLOR DATA FROM IC301 |

## 2-1-2 Symbols

⏚ Hot Ground

⏚ Cold Ground

⚠ Provides special safety considerations

## 2-1-2 Acronyms

| Acronym | Definition |
|---|---|
| ABL | Automatic Brightness Limits |
| AC | Alternating Current |
| ACL | Automatic Contrast Limit |
| AFC | Automatic Frequency Control |
| ANSI | American National Standards Institute |
| CMOS | Complementary Metal Oxide Semiconductor |
| CRT | Cathode Ray Tube |
| DC | Direct Current |
| DDC | Data Display Channel |
| DF | Dynamic Focus |
| DMM | Digital Multimeter |
| DPMS | Display Power Management Signaling |
| DVM | Digital Voltmeter |
| DY | Deflection Yoke |
| EEPROM | Electrically Erasable and Programmable Read only Memory |
| ESD | Electrostatically Sensitive Device |
| ESF | Electronic Static Field |
| FBT | Flyback Transformer |
| FET | Field Effect Transistor |
| FH | Horizontal Frequency |
| FS | Fail Safe |
| FV | Vertical Frequency |
| GD | Geometric Distortion |

| Acronym | Definition |
|---|---|
| H/V | Horizontal/Vertical |
| HV | High Voltage |
| I/O | Input/Output |
| IC | Integrated Circuit |
| LED | Light Emitting Diode |
| MAC | Macintosh |
| MOFA | Mask Outside Frame Assembly |
| OCP | Over Current Protection |
| OP AMP | Operational Amplifier |
| OSD | On Screen Display |
| P-P | Peak to Peak |
| PCB | Printed Circuit Board |
| PLL | Phase Locked Loop |
| PWM | Pulse Width Modulation |
| SMPS | Switch Mode Power Supply |
| SVGA | Super Video Graphics Array |
| TP | Test Point |
| UL | Underwriters Laboratories |
| USB | Universal Serial Bus |
| VESA | Video Electronics Standard Association |
| VGA | Video Graphics Array |
| VR | Variable Registor |
| W/B | White Balance |

# 3 Product Specifications

## 3-1 Specifications

| Item | Description | |
|---|---|---|
| LCD Panel | TFT-LCD panel, RGB vertical stripe, normaly white, 15-Inch viewable,<br>0.297 (H) x 0.297 (V) pixel pitch, 13.3-Inch viewable, 0.264 (H) x 0.264 (V) pixel pitch | |
| Scanning Frequency | Horizontal : 30 kHz to 61 kHz (Automatic)<br>Vertical : 50 Hz to 75 Hz (Automatic) | |
| Display Colors | 16.7 Million colors | |
| Maximum Resolution | Horizontal : 1024 Pixels<br>Vertical : 768 Pixels | |
| Input Video Signal | Analog, 0.714 Vp-p ± 5% positive at 75 Ω, internally terminated | |
| Input Sync Signal | Type: Seperate H/V sync, Composite H/V, Sync-on-Green, automatic synchronization without external switch of sync type<br>Level: TTL level | |
| Maximum Pixel Clock rate | 80 MHz | |
| Active Display<br>Horizontal/Vertical | 13.3": 270.3 mm / 207.8 mm<br>15": 304.1 mm / 228.1 mm | |
| AC power voltage & Frequency | AC 90 to 264 Volts, 60/ 50 Hz ± 3 Hz | |
| Power Consumption | 13.3": 40 W (max.), 15": 45 W (max.) | |
| Dimensions | 13.3" | 15" |
| Unit (W x D x H)<br>Carton (W x D x H) | 13.9x7.7x15.6 Inches (354.3 x 195.6 x 395 mm)<br>17.9 x 11.1 x 19.2 Inches (455 x 282 x 488 mm) | 15.9x7.7x16.5 Inches (404 x 196.6 x 418.7 mm)<br>18.7 x 11.1 x 20.1 Inches (475 x 282 x 510 mm) |
| Weight<br>(Net/Gross) | 13.3": 6.4 kg / 8.0 kg, 15": 7.5 kg / 9.5 kg | |
| Environmental Considerations | Operating Temperature : 50°F to 104°F (10°C to 40°C)<br>Humidity : 10 % to 80 %<br>Storage Temperature : -13°F to 113°F (-25°C to 45°C)<br>Humidity : 5 % to 95 % | |
| Audio Characteristics | • Audio Characteristics<br>• Built-in Microphone: High-sensitivity condenser microphone (mono)<br>• Audio input: Left/Right Stereo phone jack, 0.7 Vrms<br>• Sound output: 1 W (left) + 1 W (right)/THD 1% at 8ohm<br>• Frequency response: 80 Hz~20 kHz (at –3dB)<br>• Headphone: Max 50mW output (3.5-pi jack)<br>• Speaker: Internal semi Dome (8ohm x 2) | |

- SyncMaster 33*TFT/53*TFT complies with SWEDAC (MPR II) recommendations for reduced electromagnetic fields.
- Designs and specifications are subject to change without prior notice.

## 3-2 Pin Assignments

| Sync Type / Pin No. | 15-Pin Signal Cable Connector | | |
|---|---|---|---|
| | **Separate** | **Composite** | **Sync-on-green** |
| 1 | Red | Red | Red |
| 2 | Green | Green | Green + H/V Sync |
| 3 | Blue | Blue | Blue |
| 4 | GND | GND | GND |
| 5 | GND (DDC Return) | GND (DDC Return) | GND (DDC Return) |
| 6 | GND-R | GND-R | GND-R |
| 7 | GND-G | GND-G | GND-G |
| 8 | GND-B | GND-B | GND-B |
| 9 | No Connection | No Connection | Not Used |
| 10 | GND-Sync/Self Test | GND-Sync/Self Test | GND-Sync/Self Test |
| 11 | GND | GND | GND |
| 12 | DDC Data | DDC Data | DDC Data |
| 13 | H-Sync | H/V-Sync | Not Used |
| 14 | V-Sync | Not Used | Not Used |
| 15 | DDC Clock | DDC Clock | DDC Clock |

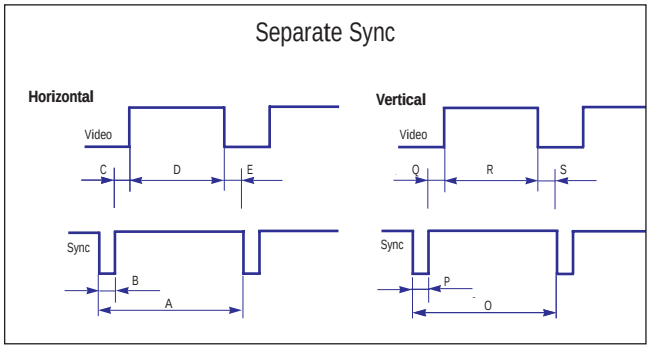
| Sync Type / Pin No. | 26-Pin Signal Cable Connector | | |
|---|---|---|---|
| | **Separate** | **Composite** | **Sync-on-green** |
| 1 | Red | Red | Red |
| 2 | Green | Green | Green + H/V Sync |
| 3 | Blue | Blue | Blue |
| 4 | GND | GND | GND |
| 5 | GND (DDC Return) | GND (DDC Return) | GND (DDC Return) |
| 6 | GND-R | GND-R | GND-R |
| 7 | GND-G | GND-G | GND-G |
| 8 | GND-B | GND-B | GND-B |
| 9 | No Connection | No Connection | Not Used |
| 10 | GND-Sync/Self Test | GND-Sync/Self Test | GND-Sync/Self Test |
| 11 | GND | GND | GND |
| 12 | DDC Data | DDC Data | DDC Data |
| 13 | H-Sync | H/V-Sync | Not Used |
| 14 | V-Sync | Not Used | Not Used |
| 15 | DDC Clock | DDC Clock | DDC Clock |
| 16 ~26 | GND | GND | GND |

## 3-3 Timing Chart

This section of the service manual describes the timing that the computer industry recognizes as standard for computer-generated video signals.

Table 3-1. Timing Chart

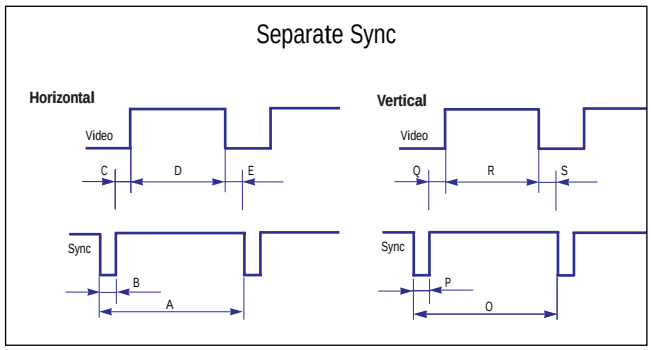
| Mode / Timing | IBM | | | VESA | | | |
|---|---|---|---|---|---|---|---|
| | VGA1/70 Hz 640 x 350 | VGA2/70 Hz 720 x 400 | VGA3/60 Hz 640 x 480 | 640/72 Hz 640 x 480 | 640/75 Hz 640 x 480 | 800/56 Hz 800 x 600 | 800/60 Hz 800 x 600 |
| fH (kHz) | 31.469 | 31.469 | 31.469 | 37.861 | 37.500 | 35.156 | 37.879 |
| A µsec | 31.778 | 31.777 | 31.778 | 26.413 | 26.667 | 28.444 | 26.400 |
| B µsec | 3.813 | 3.813 | 3.813 | 1.270 | 2.032 | 2.000 | 3.200 |
| C µsec | 1.589 | 1.589 | 1.589 | 3.810 | 3.810 | 3.556 | 2.200 |
| D µsec | 26.058 | 26.058 | 26.058 | 20.825 | 20.317 | 22.222 | 20.000 |
| E µsec | 0.318 | 0.318 | 0.318 | 0.508 | 0.508 | 0.667 | 1.000 |
| fV (Hz) | 70.086 | 70.087 | 59.940 | 72.809 | 75.000 | 56.250 | 60.317 |
| O msec | 14.268 | 14.268 | 16.683 | 13.735 | 13.333 | 17.778 | 16.579 |
| P msec | 0.064 | 0.064 | 0.064 | 0.079 | 0.080 | 0.057 | 0.106 |
| Q msec | 1.716 | 0.858 | 0.794 | 0.528 | 0.427 | 0.626 | 0.607 |
| R msec | 11.504 | 13.155 | 15.761 | 13.100 | 12.800 | 17.067 | 15.840 |
| S msec | 0.985 | 0.191 | 0.064 | 0.026 | 0.027 | 0.028 | 0.026 |
| Clock Frequency (MHz) | 25.175 | 28.322 | 25.175 | 31.500 | 31.500 | 36.000 | 40.000 |
| Polarity H.Sync | Positive | Negative | Negative | Negative | Negative | Positive | Positive |
| V.Sync | Negative | Positive | Negative | Negative | Negative | Negative | Positive |
| Remark | Separate | Separate | Separate | Separate | Separate | Separate | Separate |




| | | | |
|---|---|---|---|
| A : Line time total | B : Horizontal sync width | O : Frame time total | P : Vertical sync width |
| C : Back porch | D : Active time | Q : Back porch | R : Active time |
| E : Front porch | | S : Front porch | |

Table 3-1. Timing Chart Continued

| Mode / Timing | VESA | | | | | MAC. | |
|---|---|---|---|---|---|---|---|
| | 800/72 Hz 800 x 600 | 800/75 Hz 800 x 600 | 1024/60 Hz 1024 x 768 | 1024/70 Hz 1024 x 768 | 1024/75 Hz 1024 x 768 | 640/67 Hz 60 x 480 | 832/75 Hz 832 x 624 |
| fH (kHz) | 48.077 | 46.875 | 48.363 | 56.476 | 60.023 | 35.000 | 49.726 |
| A µsec | 20.800 | 21.333 | 20.677 | 17.707 | 16.660 | 28.571 | 20.110 |
| B µsec | 2.400 | 1.616 | 2.092 | 1.813 | 1.219 | 2.116 | 1.117 |
| C µsec | 1.280 | 3.232 | 2.462 | 1.920 | 2.235 | 3.175 | 3.910 |
| D µsec | 16.000 | 16.162 | 15.754 | 13.653 | 13.003 | 21.164 | 14.524 |
| E µsec | 1.120 | 0.323 | 0.369 | 0.320 | 0.203 | 2.116 | 0.559 |
| fV (Hz) | 72.188 | 75.000 | 60.004 | 70.069 | 75.029 | 66.667 | 74.551 |
| O msec | 13.853 | 13.333 | 16.666 | 14.272 | 13.328 | 15.000 | 13.414 |
| P msec | 0.125 | 0.064 | 0.124 | 0.106 | 0.050 | 0.086 | 0.060 |
| Q msec | 0.478 | 0.448 | 0.600 | 0.513 | 0.466 | 1.114 | 0.784 |
| R msec | 12.480 | 12.800 | 15.880 | 13.599 | 12.795 | 13.714 | 12.549 |
| S msec | 0.770 | 0.021 | 0.062 | 0.053 | 0.017 | 0.086 | 0.020 |
| Clock Frequency (MHz) | 50.000 | 49.500 | 65.000 | 75.000 | 78.750 | 30.240 | 57.284 |
| Polarity H.Sync | Positive | Positive | Negative | Negative | Positive | Negative | Negative |
| V.Sync | Positive | Positive | Negative | Negative | Positive | Negative | Negative |
| Remark | Separate | Separate | Separate | Separate | Separate | Separate | Separate |

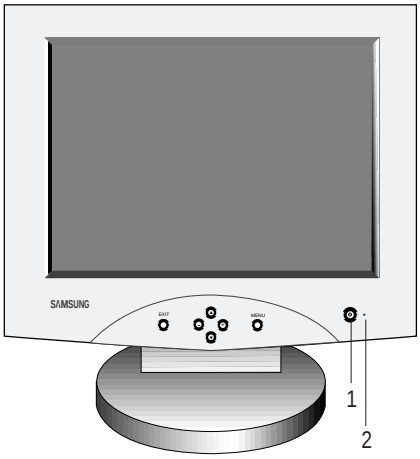



| | | | |
|---|---|---|---|
| A : Line time total | B : Horizontal sync width | O : Frame time total | P : Vertical sync width |
| C : Back porch | D : Active time | Q : Back porch | R : Active time |
| E : Front porch | | S : Front porch | |

# 4 Operating Instructions

## 4-1 Control and Connectors

### 4-1-1 SyncMaster 331TFT/531TFT



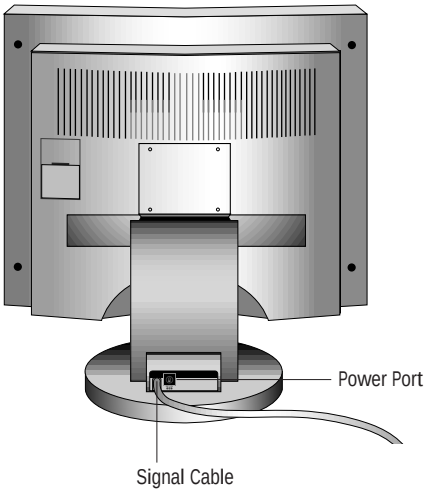




Figure 4-2. Rear View

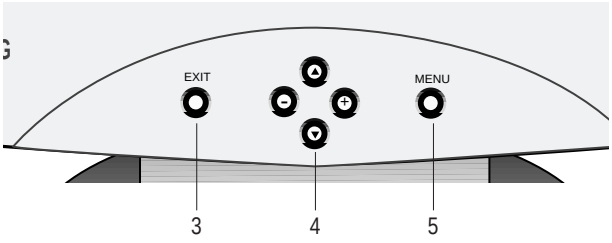
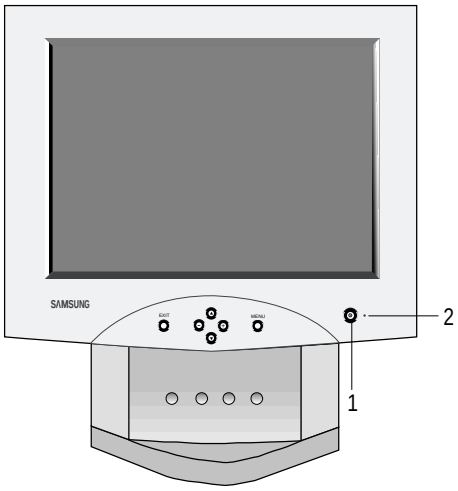



Figure 4-1. Front View and Control

Table 4-1. Front Panel Controls

| Location | Symbol | Description |
|---|---|---|
| 1 | ⊙ | Power Button |
| 2 | ● | Power Indicator |
| 3 | EXIT ○ | EXIT Button |
| 4 | ▲ - + ▼ | Up / Down / + / – Buttons |
| 5 | MENU ○ | MENU Button |

### 4-1-2 SyncMaster 330TFT/530TFT



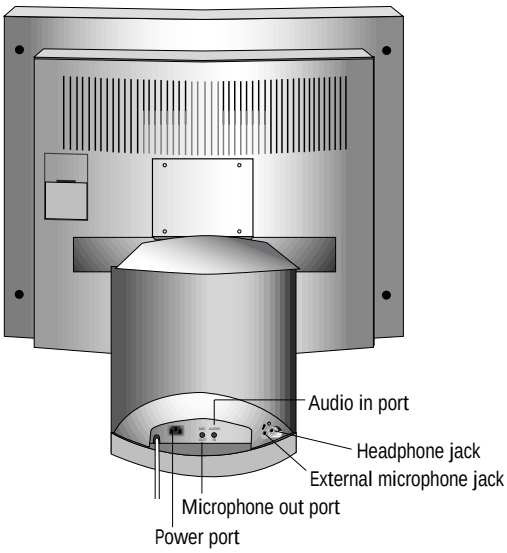




Figure 4-4. Rear View

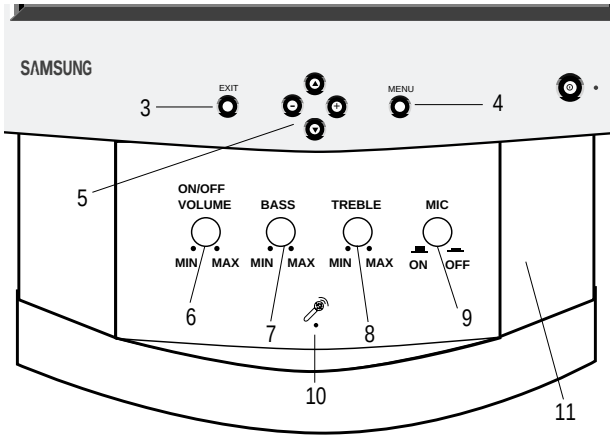



Figure 4-3. Front View and Control

Table 4-2. Front Panel Controls

| Location | Symbol | Description |
|---|---|---|
| 1 | ⊙ | Power Button |
| 2 | ● | Power Indicator |
| 3 | EXIT ○ | Menu Button |
| 4 | MENU ○ | Exit Button |
| 5 | − + | Up / Down / + / – Buttons |
| 6 | ON/OFF VOLUME ○ MIN MAX | Audio On / Off & Volume Buttons |
| 7 | BASS ○ MIN MAX | Bass Button |
| 8 | TREBLE ○ MIN MAX | Treble Button |
| 9 | MIC ○ ON OFF | Microphone On / Off Button |
| 10 | | Microphone |
| 11 | | Amplified Stereo Speakers |

## 4-2 Microprocessor Controls and Functions

This monitor has no "service only" micom controls. Should there be a problem with the microprocessor, replace the entire circuit board. There are, however, user accessible adjustment features that are described below.

This monitor has factory preset display settings for each of the signals listed in the standard display modes Timing Chart (see pages 3-3 and 3-4). As a result, when the monitor senses one of the standard signal timings, it automatically adjusts to an optimum size and position.

However, the user may wish to adjust the monitor to their own preferred settings rather than use those preset at the factory. The monitor saves up to 16 user defined settings.

### 4-2-1 OSD Window

The adjustable features described below all use the on-screen menu system.

1. Push the ↵ button to open the display the on-screen menu.
2. Use the ▲ or ▼ button to change an adjustment icon, use the ↵ button to highlight an adjustment icon, then use the + or – buttons to make the adjustments.
3. To select another adjustment on the same screen, use the ▲ or ▼ button to move to the next selection.
4. When you are done making adjustments on an adjustment icon, push the EXIT button.
5. When you are done making all adjustments, push the EXIT button.

Table 4-3 shows the adjustment types and their icons.

Table 4-3. Available adjustments

| Icon | Description | Adjustment Range | | | Icon | Description | Adjustment Range |
|---|---|---|---|---|---|---|---|
| | Image Lock<br>Fine<br>Coarse | IBM | VGA1/70 Hz | 0-100<br>740-860 | | Position<br>Horizontal<br>Vertical | 0 ~ 100<br>0 ~ 100 |
| | | | VGA2/70 Hz | 0-100<br>840-960 | | Auto Reset<br>Auto Adjustment<br>Geometry<br>Color | <br>No/Yes<br>No/Yes<br>No/Yes |
| | | | VGA3/60 Hz | 0-100<br>740-860 | | Image Size<br>Zoom<br>Display Size | <br>x1, x2, x4, x8<br>Normal/Expand |
| | | VESA | SVGA/56 Hz | 0-100<br>964-1084 | | | |
| | | | SVGA/60 Hz | 0-100<br>996-1116 | | Misc.<br>Language<br>Menu Position<br>Menu Display Time<br>Display Mode | <br><br>0 ~ 100<br>0 ~ 100 |
| | | | XGA/60 Hz | 0-100<br>1284-1404 | | | |
| | Brightness | 0 ~ 100 | | | | | |
| | Contrast | 0 ~ 100 | | | | | |
| | Color Control<br>Red<br>Green<br>Blue | <br>0 ~ 100<br>0 ~ 100<br>0 ~ 100 | | | | Color Temperature<br>Mode1<br>Mode2<br>Mode3 | |

## 4-3 Audio Controls

Your LCD monitor provides four audio control buttons located on the front of the stand.

### 4-3-1 Audio Adjustments

To access the on/off, volume, bass and treble functions push the appropriate blue control button until it pops out then turn it to the right or left to adjust the function.

| Function Name | Effect of Control Movement | |
|---|---|---|
| | Left | Right |
| Audio On/Off and Volume | Off | On |
| | Decrease volume | Increase volume |
| Bass | Decrease Low sounds | Increase low sounds |
| Treble | Decrease high sounds | Increase High sounds |

Your LCD monitor includes an internal microphone which you can turn On or Off using the rightmost control of the Audio controls.

| Function Name | Effect of Control Movement | |
|---|---|---|
| | In | Out |
| Audio On/Off and Volume | Off | On |

## 4-4 Power Management System

This monitor has a built-in power management system called PowerSaver. This system saves energy by switching your monitor into an off mode when it has not been used for an certain amount of time.

This system operates with a VESA DPMS compliant video card installed in your computer. You use a software utility installed on your computer to set up this feature. See the table below for details.

Table 4-4. Display Power Management Signaling (DPMS); 13.3”

| State / Items | Normal Operation | Power saving function EPA/NUTEK | | |
|---|---|---|---|---|
| | | Stand-By Mode | Suspend Mode Position A | Power Off Mode Position B |
| Horizontal Sync | Active | Inactive | Active | Inactive |
| Vertical Sync | Active | Active | Inactive | Inactive |
| Video | Active | Blanked | Blanked | Blanked |
| Power Indicator | Green | Amber | Amber Blinking (0.5 sec) | Amber Blinking (1 sec) |
| Power Consumption/hr (13.3”) | 40 W (max.) 30 W (nominal) | Less than 5 W | Less than 5 W | Less than 5 W |
| Power Consumption/hr (15”) | 45 W (max.) 35 W (nominal) | Less than 5 W | Less than 5 W | Less than 5 W |

**Note 1:** This monitor automatically returns to normal operation when horizontal and vertical sync return. This occurs when you move the computer's mouse or press a key on the keyboard.

**Note 2:** This monitor is EPA ENERGY STAR® compliant and NUTEK compliant when used with a computer equipped with VESA DPMS functionality. If your computer system cannot support a display power management function, you can purchase an optional DPMS software program to enable the power saving function. Please contact Samsung or your dealer for more information.

**Note 3:** For energy conservation, turn your monitor OFF when it is not needed, or when leaving it unattended for long periods.

**Note 4:** Audio Part is operated separately by control button.

# 5 Disassembly and Reassembly

This section of the service manual describes the disassembly and reassembly procedures for the SyncMaster 33*TFT/53*TFT monitors.

**WARNING: This monitor contains electrostatically sensitive devices. Use caution when handling these components.**

## 5-1 Disassembly

**Cautions:** 1. Disconnect the monitor from the power source before disassembly.
2. Follow these directions carefully; never use metal instruments to pry apart the cabinet.

### 5-1-1 Removing the Stand

1. Carefully push the edge of the hinge cap with a '–' screw driver until the opposite end of the hinge cap releases.

Figure 5-1

2. Remove 4 screws in the hinge area.

Figure 5-2

3. Push the stand to the left side to release the hinge.

   **Caution:** Be careful. Signal cable and power cable are still attached to the monitor.

4. Lift the stand away from the monitor until Vesa Cover is completely visible. And pry it off the back of the monitor.
5. Disconnect Power Cord and Signal Cable.

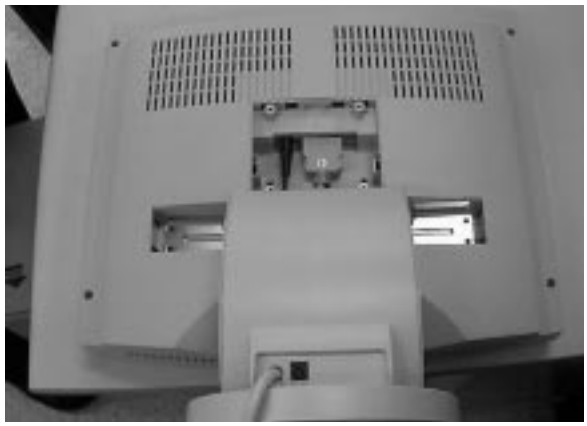


Figure 5-3

### 5-1-2 Main Body Disassembly

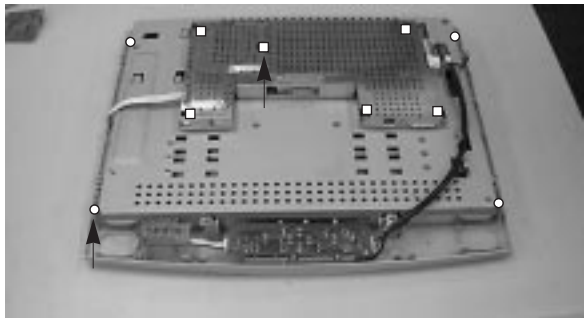


Figure 5-4

1. Remove the 4 screws on the Rear Cover. (Marked: ◯ )
2. Remove Rear Cover from the Front Cover.
3. Remove 6 screws on the Shield. (Marked: □ )
4. Disconnect Inverter wire, Function PCB wire and Interface wire.
5. Remove the Main PCB Assembly.

6. Remove 4 screws on the Rear Panel Bracket. (15″ : 6 screws)

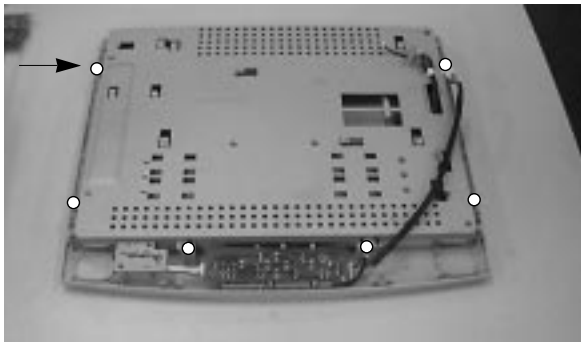


Figure 5-5

7. Remove the Bracket Assembly from the Front Cover.
8. Remove 1 screw on the Power PCB.
9. Remove Function PCB from locking area of Function Knob.

Figure 5-6

10. Remove 4 screws on the Shield of Panel.
11. Remove the Shield.
12. Disconnect the jack between Panel and Inverter PCB.
13. Remove Rear Bracket.

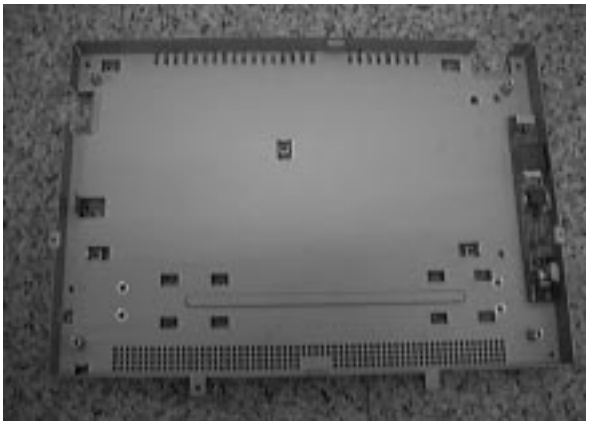


Figure 5-7

14. Remove 2 screws between Rear Bracket and Inverter PCB.
15. Remove the Interface wire on the Rear Side of Panel.

### 5-1-3 Stand Disassembly

1. Stand the stand assembly with the base close to you.

Figure 5-8

2. Make a little gap between stand assembly and Rear Cover with a '–' screw driver. And pry Rear Cover off stand assembly with the finger.

Figure 5-9

3. Remove the 10 screws from the stand assembly.

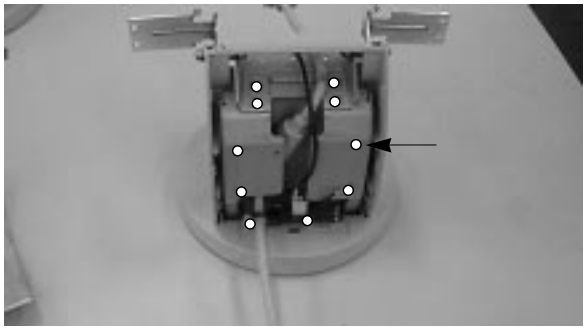


Figure 5-10

4. Remvoe the hinge, neck front, PCB, signal cable.

5. Remove the screw and washer on the base of the stand.

Figure 5-11

6. Remove the Stand Base and Stand Top.

## 5-2 Replacement Order of Lamp Assemblies (13.3”)

1. Disconnect lamp lead-connector from the inverter.

* Replacement of lamp assemblies should be done at the power off state and recommended clean bench condition.

2. Remove a screw which is used to hold a lamp assembly on.

3. Replace lamp assemblies.
4. Assemble new lamp assembly according to the counter order.

## 5-3 Replacement Order of Lamp Assemblies (15”)

1. Disconnect lamp lead-connectors from the inverter. (2EA)

* Replacement of lamp assemblies should be done at the power off state and recommended clean bench condition.

2. Remove 2 screws which are used to hold the lamp assemblies on.

3. Replace 2 lamp assemblies.
4. Assemble new lamp assemblies according to the counter order.

## 5-4 Reassembly

Reassembly procedures are in the reverse order of Disassembly procedures.

# 6 Troubleshooting

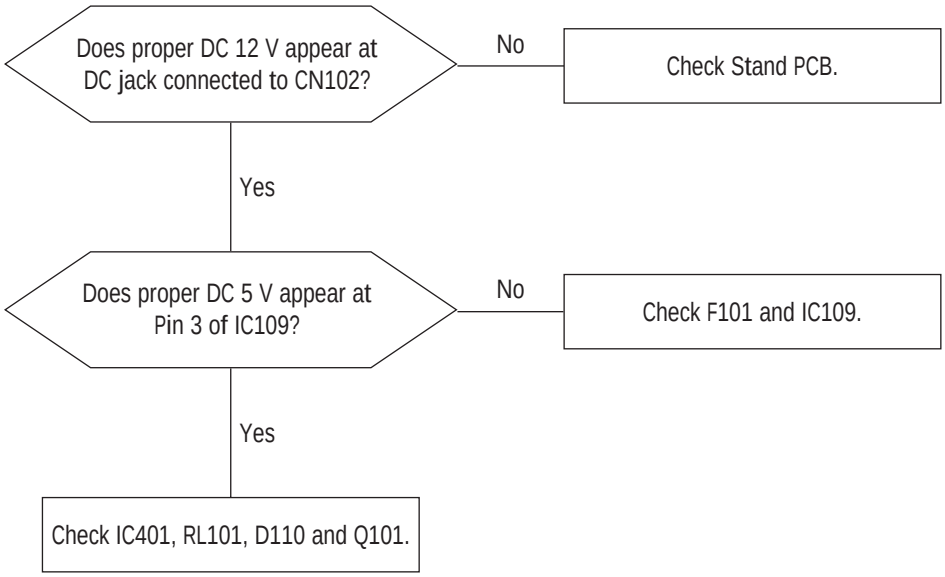
**Notes:** 1. Before troubleshooting, setup the PC's display as below.
- Resolution: 1024 x 768
- H-frequency: 48 kHz
- V-frequency: 60 Hz

2. If no picture appears, make sure the power cord is correctly connected.

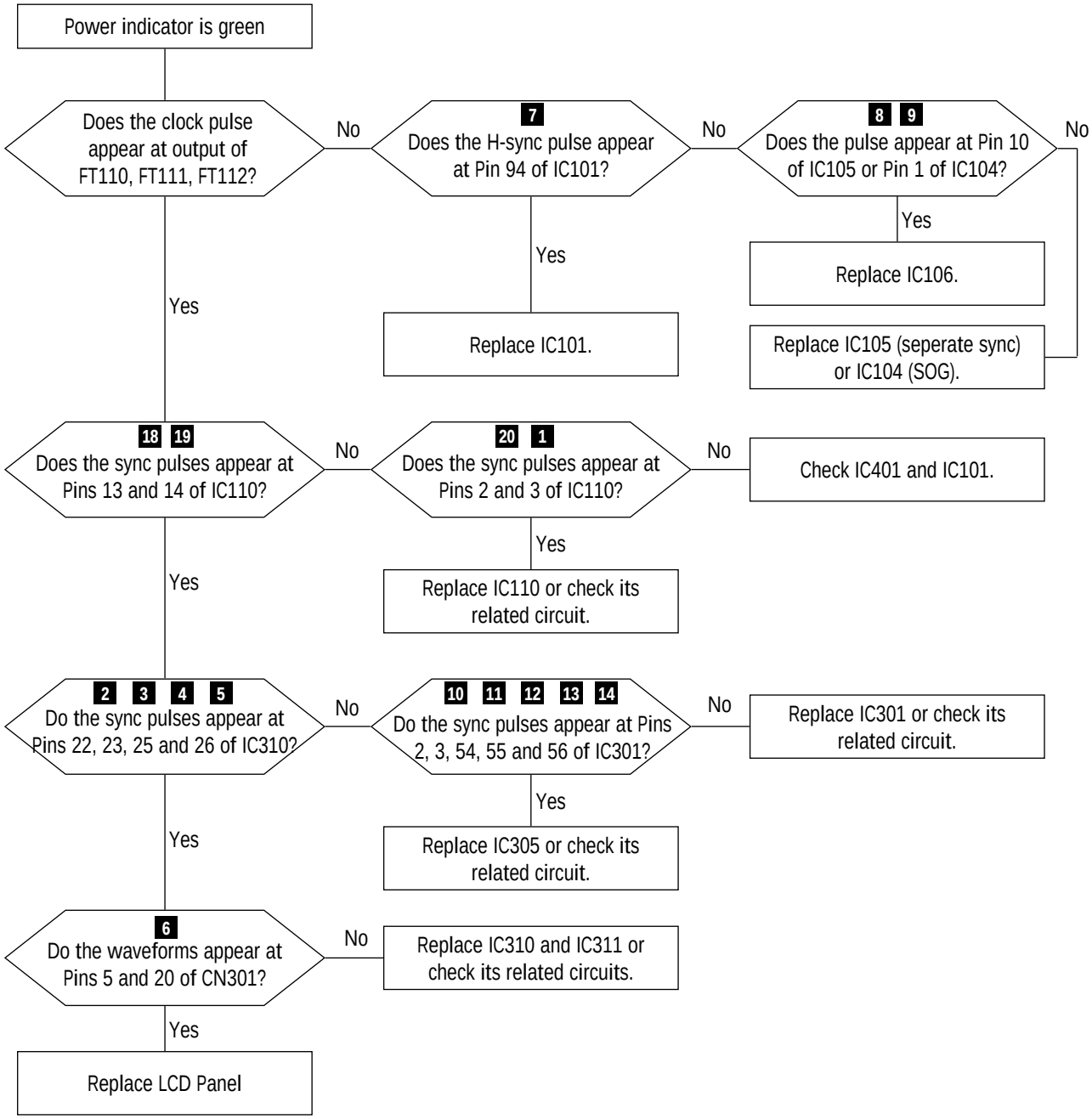
3. Check the following circuits.
- No raster appears: Audio PCB, SMPS PCB, Main PCB (SyncMaster 330TFT/550TFT)
  Stand PCB, Main PCB (SyncMaster 331TFT/531TFT)
- 12V develop but no screen: Main PCB
- 12V does not develop: Audio PCB, SMPS PCB (SyncMaster 330TFT/530TFT)
  Main PCB (SyncMaster 331TFT/531TFT)

4. If you push and hold the "EXIT" button for more than 5 seconds, the monitor automatically turns back to the factory preset.

## 6-1 No Power

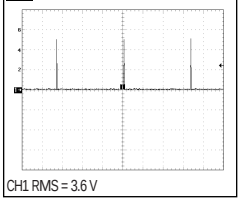

Does proper DC 12 V appear at DC jack connected to CN102?
No
Check Stand PCB.
Yes
Does proper DC 5 V appear at Pin 3 of IC109?
No
Check F101 and IC109.
Yes
Check IC401, RL101, D110 and Q101.

## 6-2 No Video


Power indicator is green
Does the clock pulse appear at output of FT110, FT111, FT112?
No
7
Does the H-sync pulse appear at Pin 94 of IC101?
No
8 9
Does the pulse appear at Pin 10 of IC105 or Pin 1 of IC104?
No
Yes
Replace IC106.
Yes
Replace IC101.
Replace IC105 (seperate sync) or IC104 (SOG).
Yes
18 19
Does the sync pulses appear at Pins 13 and 14 of IC110?
No
20 1
Does the sync pulses appear at Pins 2 and 3 of IC110?
No
Check IC401 and IC101.
Yes
Replace IC110 or check its related circuit.
Yes
2 3 4 5
Do the sync pulses appear at Pins 22, 23, 25 and 26 of IC310?
No
10 11 12 13 14
Do the sync pulses appear at Pins 2, 3, 54, 55 and 56 of IC301?
No
Replace IC301 or check its related circuit.
Yes
Replace IC305 or check its related circuit.
Yes
6
Do the waveforms appear at Pins 5 and 20 of CN301?
No
Replace IC310 and IC311 or check its related circuits.
Yes
Replace LCD Panel

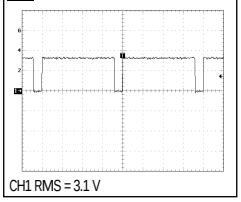
## WAVEFORMS

**1** IC110 #3



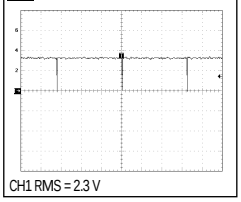
CH1 RMS = 3.6 V

**2** IC310 #22



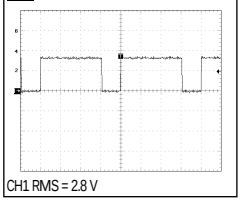
CH1 RMS = 3.1 V

**3** IC310 #23



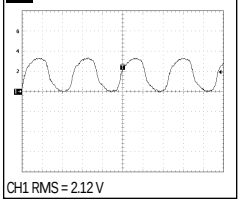
CH1 RMS = 2.3 V

**4** IC310 #25



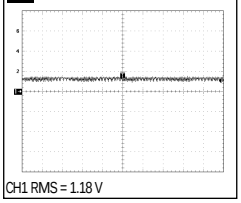
CH1 RMS = 2.8 V

**5** IC310 #26



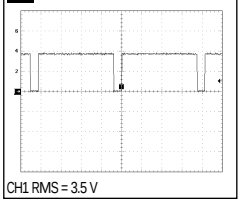
CH1 RMS = 2.12 V

**6** CN301 #5~20



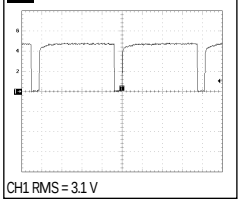
CH1 RMS = 1.18 V

**7** IC101 #94



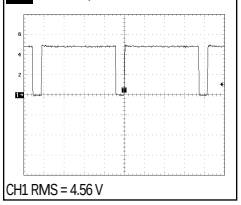
CH1 RMS = 3.5 V

**8** IC105 #10



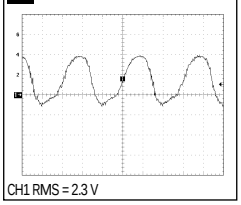
CH1 RMS = 3.1 V

**9** IC104, #1



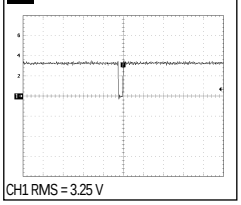
CH1 RMS = 4.56 V

**10** IC301 #2



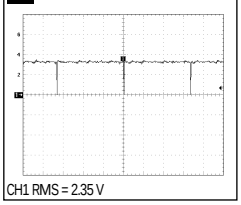
CH1 RMS = 2.3 V

**11** IC301 #3



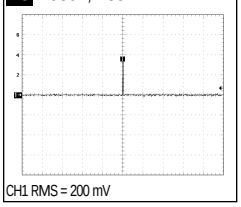
CH1 RMS = 3.25 V

**12** IC301 #54



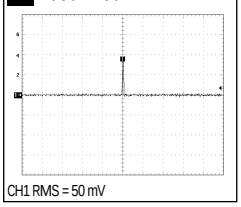
CH1 RMS = 2.35 V

**13** IC301, #55



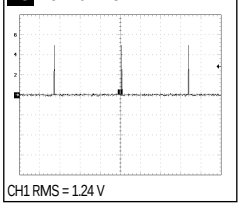
CH1 RMS = 200 mV

**14** IC301 #56



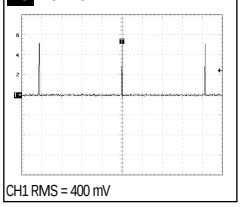
CH1 RMS = 50 mV

**18** IC110 #13



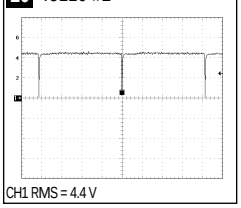
CH1 RMS = 1.24 V

**19** IC110 #14



CH1 RMS = 400 mV

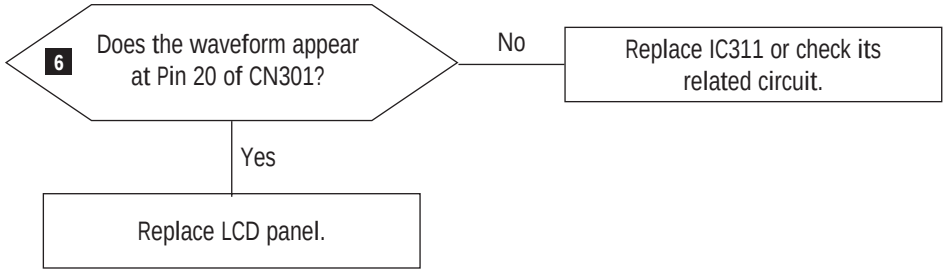
**20** IC110 #2



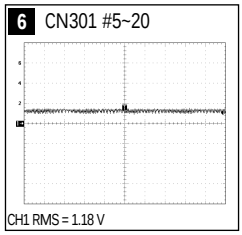
CH1 RMS = 4.4 V

## 6-3 No Video of Alternate Vertical Line

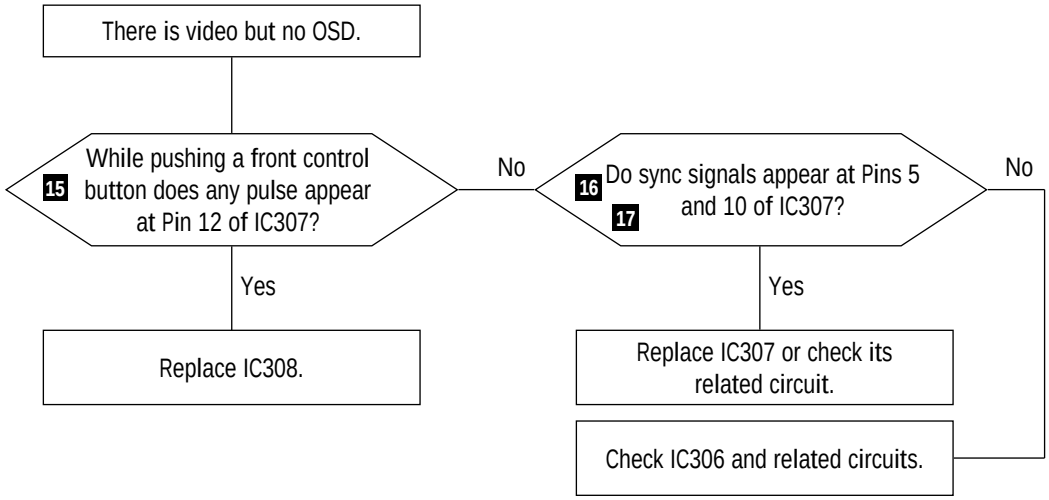
One or more even or odd vertical lines do not display.



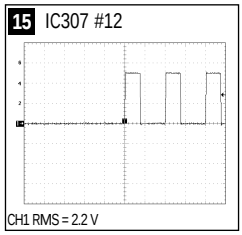

**WAVEFORMS**

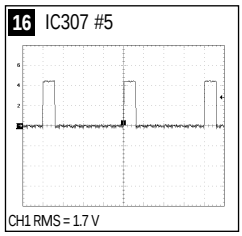


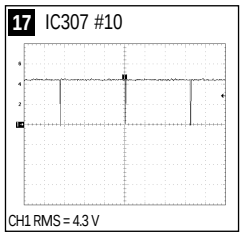

## 6-4 No OSD


There is video but no OSD.
15
While pushing a front control button does any pulse appear at Pin 12 of IC307?
No
16
17
Do sync signals appear at Pins 5 and 10 of IC307?
No
Yes
Replace IC308.
Yes
Replace IC307 or check its related circuit.
Check IC306 and related circuits.

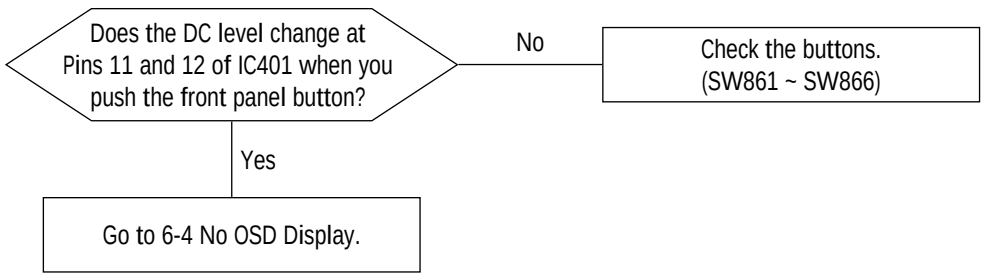
**WAVEFORMS**



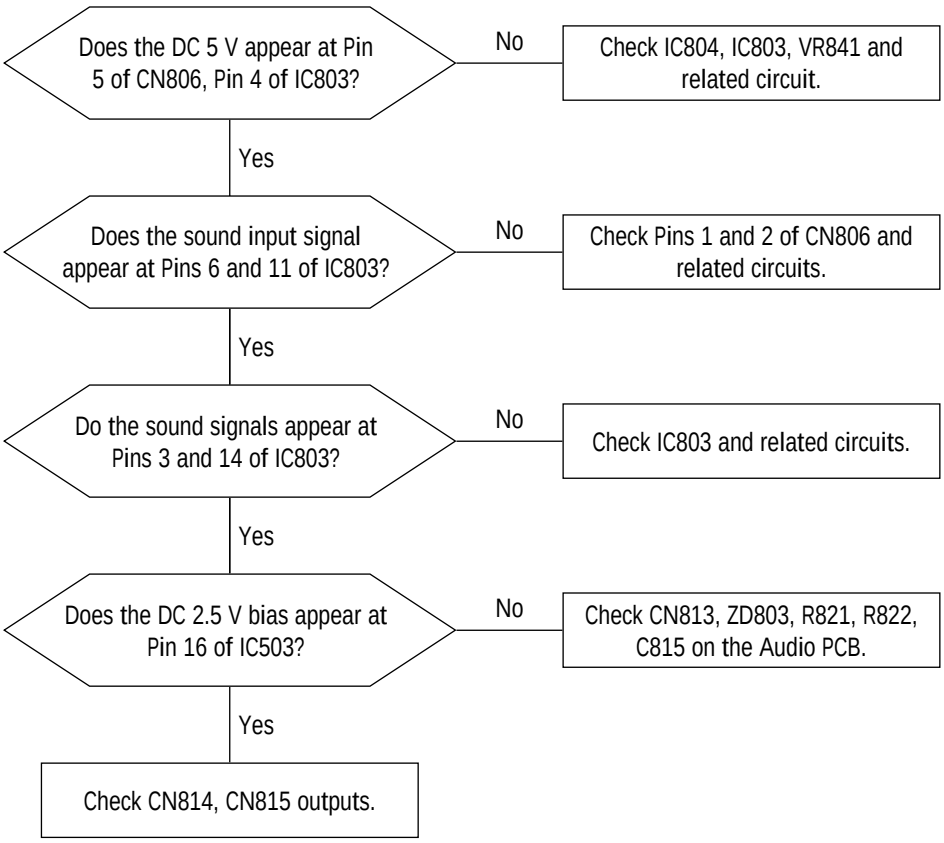



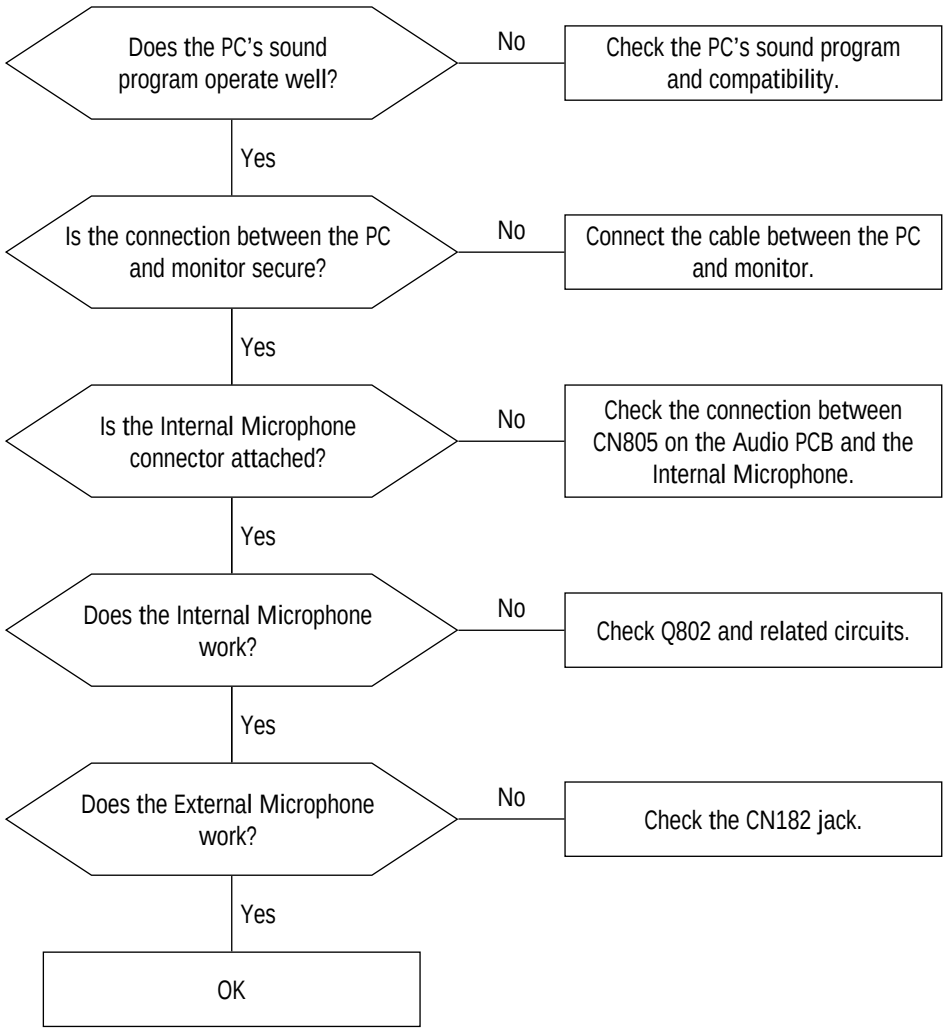

## 6-5 User Controls Don't Work


Does the DC level change at Pins 11 and 12 of IC401 when you push the front panel button?
No
Check the buttons. (SW861 ~ SW866)
Yes
Go to 6-4 No OSD Display.

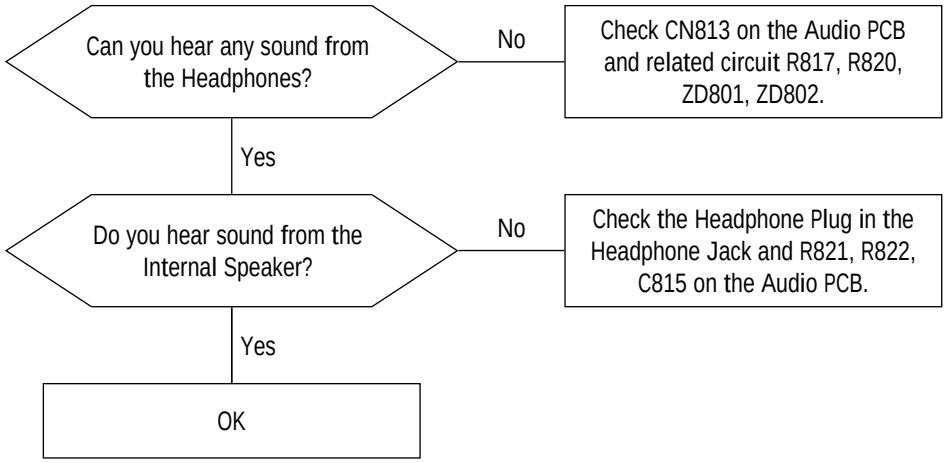
## 6-6 No Sound (SyncMaster 330TFT/530TFT)


Does the DC 5 V appear at Pin 5 of CN806, Pin 4 of IC803?
No
Check IC804, IC803, VR841 and related circuit.
Yes
Does the sound input signal appear at Pins 6 and 11 of IC803?
No
Check Pins 1 and 2 of CN806 and related circuits.
Yes
Do the sound signals appear at Pins 3 and 14 of IC803?
No
Check IC803 and related circuits.
Yes
Does the DC 2.5 V bias appear at Pin 16 of IC503?
No
Check CN813, ZD803, R821, R822, C815 on the Audio PCB.
Yes
Check CN814, CN815 outputs.

## 6-7 Microphones Don't Work (SyncMaster 330TFT/530TFT)




## 6-8 Headphones Don't Work (SyncMaster 330TFT/530TFT)


Can you hear any sound from the Headphones?
No
Check CN813 on the Audio PCB and related circuit R817, R820, ZD801, ZD802.
Yes
Do you hear sound from the Internal Speaker?
No
Check the Headphone Plug in the Headphone Jack and R821, R822, C815 on the Audio PCB.
Yes
OK

# 9 Electrical Parts List

## 9-1 Main PCB Parts

| Loc. No. | Code No. | Description | Specification | Remarks |
|---|---|---|---|---|
| BD101 | 2703-001334 | INDUCTOR-SMD | 1.5uH,10%,2x1.25x0.85mm | |
| BD102 | 2703-001334 | INDUCTOR-SMD | 1.5uH,10%,2x1.25x0.85mm | |
| BD103 | 2703-001334 | INDUCTOR-SMD | 1.5uH,10%,2x1.25x0.85mm | |
| BD104 | 2703-001334 | INDUCTOR-SMD | 1.5uH,10%,2x1.25x0.85mm | |
| BD105 | 2703-001334 | INDUCTOR-SMD | 1.5uH,10%,2x1.25x0.85mm | |
| C100 | 2203-000260 | C-CERAMIC,CHIP | 10nF,10%,50V,X7R,TP,2012 | |
| C101 | 2402-000168 | C-AL,SMD | 100uF,20%,16V,TP,8x6.3 | |
| C102 | 2203-000260 | C-CERAMIC,CHIP | 10nF,10%,50V,X7R,TP,2012 | |
| C103 | 2402-000168 | C-AL,SMD | 100uF,20%,16V,TP,8x6.3 | |
| C104 | 2203-000260 | C-CERAMIC,CHIP | 10nF,10%,50V,X7R,TP,2012 | |
| C105 | 2402-000168 | C-AL,SMD | 100uF,20%,16V,TP,8x6.3 | |
| C106 | 2402-000168 | C-AL,SMD | 100uF,20%,16V,TP,8x6.3 | |
| C107 | 2203-000239 | C-CERAMIC,CHIP | 100pF,5%,50V,NPO,TP,2012 | |
| C108 | 2203-000239 | C-CERAMIC,CHIP | 100pF,5%,50V,NPO,TP,2012 | |
| C109 | 2203-000260 | C-CERAMIC,CHIP | 10nF,10%,50V,X7R,TP,2012 | |
| C110 | 2203-000203 | C-CERAMIC,CHIP | 100nF,10%,16V,X7R,TP,2012 | |
| C111 | 2203-000203 | C-CERAMIC,CHIP | 100nF,10%,16V,X7R,TP,2012 | |
| C112 | 2203-000203 | C-CERAMIC,CHIP | 100nF,10%,16V,X7R,TP,2012 | |
| C113 | 2203-000203 | C-CERAMIC,CHIP | 100nF,10%,16V,X7R,TP,2012 | |
| C114 | 2203-000203 | C-CERAMIC,CHIP | 100nF,10%,16V,X7R,TP,2012 | |
| C115 | 2404-000123 | C-TA,CHIP | 10uF,20%,16V,TP,6032,2.9mm | |
| C116 | 2203-000260 | C-CERAMIC,CHIP | 10nF,10%,50V,X7R,TP,2012 | |
| C117 | 2203-000203 | C-CERAMIC,CHIP | 100nF,10%,16V,X7R,TP,2012 | |
| C118 | 2203-000260 | C-CERAMIC,CHIP | 10nF,10%,50V,X7R,TP,2012 | |
| C119 | 2203-000203 | C-CERAMIC,CHIP | 100nF,10%,16V,X7R,TP,2012 | |
| C120 | 2203-000260 | C-CERAMIC,CHIP | 10nF,10%,50V,X7R,TP,2012 | |
| C121 | 2203-000203 | C-CERAMIC,CHIP | 100nF,10%,16V,X7R,TP,2012 | |
| C122 | 2203-000260 | C-CERAMIC,CHIP | 10nF,10%,50V,X7R,TP,2012 | |
| C123 | 2203-000609 | C-CERAMIC,CHIP | 22nF,10%,50V,X7R,TP,2012 | |
| C124 | 2203-000260 | C-CERAMIC,CHIP | 10nF,10%,50V,X7R,TP,2012 | |
| C125 | 2203-000609 | C-CERAMIC,CHIP | 22nF,10%,50V,X7R,TP,2012 | |
| C126 | 2203-000260 | C-CERAMIC,CHIP | 10nF,10%,50V,X7R,TP,2012 | |
| C127 | 2203-000609 | C-CERAMIC,CHIP | 22nF,10%,50V,X7R,TP,2012 | |
| C128 | 2203-000137 | C-CERAMIC,CHIP | 1.5nF,10%,50V,NPO,TP,2012 | |
| C129 | 2203-000260 | C-CERAMIC,CHIP | 10nF,10%,50V,X7R,TP,2012 | |
| C130 | 2203-000260 | C-CERAMIC,CHIP | 10nF,10%,50V,X7R,TP,2012 | |
| C131 | 2203-000260 | C-CERAMIC,CHIP | 10nF,10%,50V,X7R,TP,2012 | |
| C132 | 2203-000260 | C-CERAMIC,CHIP | 10nF,10%,50V,X7R,TP,2012 | |
| C133 | 2203-000260 | C-CERAMIC,CHIP | 10nF,10%,50V,X7R,TP,2012 | |
| C134 | 2203-000260 | C-CERAMIC,CHIP | 10nF,10%,50V,X7R,TP,2012 | |
| C135 | 2203-000260 | C-CERAMIC,CHIP | 10nF,10%,50V,X7R,TP,2012 | |
| C136 | 2203-000260 | C-CERAMIC,CHIP | 10nF,10%,50V,X7R,TP,2012 | |
| C137 | 2203-000203 | C-CERAMIC,CHIP | 100nF,10%,16V,X7R,TP,2012 | |
| C138 | 2203-000260 | C-CERAMIC,CHIP | 10nF,10%,50V,X7R,TP,2012 | |
| C139 | 2203-000203 | C-CERAMIC,CHIP | 100nF,10%,16V,X7R,TP,2012 | |

| Loc. No. | Code No. | Description | Specification | Remarks |
|---|---|---|---|---|
| C140 | 2203-000260 | C-CERAMIC,CHIP | 10nF,10%,50V,X7R,TP,2012 | |
| C141 | 2203-000203 | C-CERAMIC,CHIP | 100nF,10%,16V,X7R,TP,2012 | |
| C142 | 2203-000844 | C-CERAMIC,CHIP | 39nF,10%,50V,X7R,TP,2012 | |
| C143 | 2203-000953 | C-CERAMIC,CHIP | 470pF,5%,50V,NPO,TP,2012 | |
| C144 | 2203-000203 | C-CERAMIC,CHIP | 100nF,10%,16V,X7R,TP,2012 | |
| C145 | 2203-000260 | C-CERAMIC,CHIP | 10nF,10%,50V,X7R,TP,2012 | |
| C146 | 2203-000260 | C-CERAMIC,CHIP | 10nF,10%,50V,X7R,TP,2012 | |
| C147 | 2203-000203 | C-CERAMIC,CHIP | 100nF,10%,16V,X7R,TP,2012 | |
| C148 | 2203-000260 | C-CERAMIC,CHIP | 10nF,10%,50V,X7R,TP,2012 | |
| C149 | 2203-000203 | C-CERAMIC,CHIP | 100nF,10%,16V,X7R,TP,2012 | |
| C150 | 2203-000260 | C-CERAMIC,CHIP | 10nF,10%,50V,X7R,TP,2012 | |
| C151 | 2203-000203 | C-CERAMIC,CHIP | 100nF,10%,16V,X7R,TP,2012 | |
| C152 | 2203-000595 | C-CERAMIC,CHIP | 220pF,5%,50V,NPO,TP,2012 | |
| C153 | 2203-000595 | C-CERAMIC,CHIP | 220pF,5%,50V,NPO,TP,2012 | |
| C154 | 2203-000595 | C-CERAMIC,CHIP | 220pF,5%,50V,NPO,TP,2012 | |
| C155 | 2203-000595 | C-CERAMIC,CHIP | 220pF,5%,50V,NPO,TP,2012 | |
| C156 | 2203-001002 | C-CERAMIC,CHIP | 47pF,5%,50V,NPO,TP,2012 | |
| C157 | 2203-000203 | C-CERAMIC,CHIP | 100nF,10%,16V,X7R,TP,2012 | |
| C158 | 2203-000203 | C-CERAMIC,CHIP | 100nF,10%,16V,X7R,TP,2012 | |
| C159 | 2402-000168 | C-AL,SMD | 100uF,20%,16V,TP,8x6.3 | |
| C160 | 2203-000203 | C-CERAMIC,CHIP | 100nF,10%,16V,X7R,TP,2012 | |
| C161 | 2203-000203 | C-CERAMIC,CHIP | 100nF,10%,16V,X7R,TP,2012 | |
| C163 | 2203-000260 | C-CERAMIC,CHIP | 10nF,10%,50V,X7R,TP,2012 | |
| C165 | 2404-000256 | C-TA,CHIP | 47uF,20%,16V,TP,7343,7.3mm | |
| C166 | 2409-001004 | C-ORGANIC | 100uF,20%,16V,LL,BK,8x10.5mm,3 | |
| C167 | 2402-000168 | C-AL,SMD | 100uF,20%,16V,TP,8x6.3 | |
| C168 | 2203-000260 | C-CERAMIC,CHIP | 10nF,10%,50V,X7R,TP,2012 | |
| C169 | 2402-000168 | C-AL,SMD | 100uF,20%,16V,TP,8x6.3 | |
| C170 | 2203-000260 | C-CERAMIC,CHIP | 10nF,10%,50V,X7R,TP,2012 | |
| C172 | 2402-000168 | C-AL,SMD | 100uF,20%,16V,TP,8x6.3 | |
| C173 | 2409-001004 | C-ORGANIC | 100uF,20%,16V,LL,BK,8x10.5mm,3 | |
| C174 | 2404-000123 | C-TA,CHIP | 10uF,20%,16V,TP,6032,2.9mm | |
| C175 | 2404-000123 | C-TA,CHIP | 10uF,20%,16V,TP,6032,2.9mm | |
| C176 | 2402-000168 | C-AL,SMD | 100uF,20%,16V,TP,8x6.3 | |
| C177 | 2409-001004 | C-ORGANIC | 100uF,20%,16V,LL,BK,8x10.5mm,3 | |
| C180 | 2404-000123 | C-TA,CHIP | 10uF,20%,16V,TP,6032,2.9mm | |
| C181 | 2404-000123 | C-TA,CHIP | 10uF,20%,16V,TP,6032,2.9mm | |
| C182 | 2203-000260 | C-CERAMIC,CHIP | 10nF,10%,50V,X7R,TP,2012 | |
| C183 | 2203-000203 | C-CERAMIC,CHIP | 100nF,10%,16V,X7R,TP,2012 | |
| C184 | 2203-000260 | C-CERAMIC,CHIP | 10nF,10%,50V,X7R,TP,2012 | |
| C185 | 2203-000203 | C-CERAMIC,CHIP | 100nF,10%,16V,X7R,TP,2012 | |
| C186 | 2404-000123 | C-TA,CHIP | 10uF,20%,16V,TP,6032,2.9mm | |
| C187 | 2404-000123 | C-TA,CHIP | 10uF,20%,16V,TP,6032,2.9mm | |
| C188 | 2203-000203 | C-CERAMIC,CHIP | 100nF,10%,16V,X7R,TP,2012 | |
| C189 | 2203-000260 | C-CERAMIC,CHIP | 10nF,10%,50V,X7R,TP,2012 | |
| C190 | 2203-000203 | C-CERAMIC,CHIP | 100nF,10%,16V,X7R,TP,2012 | |
| C195 | 2203-000260 | C-CERAMIC,CHIP | 10nF,10%,50V,X7R,TP,2012 | |

| Loc. No. | Code No. | Description | Specification | Remarks |
|---|---|---|---|---|
| C196 | 2203-000260 | C-CERAMIC,CHIP | 10nF,10%,50V,X7R,TP,2012 | |
| C201 | 2203-000455 | C-CERAMIC,CHIP | 1nF,5%,50V,NPO,TP,2012 | |
| C202 | 2203-000203 | C-CERAMIC,CHIP | 100nF,10%,16V,X7R,TP,2012 | |
| C203 | 2203-000455 | C-CERAMIC,CHIP | 1nF,5%,50V,NPO,TP,2012 | |
| C204 | 2203-000203 | C-CERAMIC,CHIP | 100nF,10%,16V,X7R,TP,2012 | |
| C301 | 2203-000203 | C-CERAMIC,CHIP | 100nF,10%,16V,X7R,TP,2012 | |
| C302 | 2203-000203 | C-CERAMIC,CHIP | 100nF,10%,16V,X7R,TP,2012 | |
| C303 | 2203-000203 | C-CERAMIC,CHIP | 100nF,10%,16V,X7R,TP,2012 | |
| C304 | 2203-000203 | C-CERAMIC,CHIP | 100nF,10%,16V,X7R,TP,2012 | |
| C305 | 2203-000203 | C-CERAMIC,CHIP | 100nF,10%,16V,X7R,TP,2012 | |
| C306 | 2203-000203 | C-CERAMIC,CHIP | 100nF,10%,16V,X7R,TP,2012 | |
| C307 | 2203-000203 | C-CERAMIC,CHIP | 100nF,10%,16V,X7R,TP,2012 | |
| C308 | 2203-000203 | C-CERAMIC,CHIP | 100nF,10%,16V,X7R,TP,2012 | |
| C309 | 2203-000203 | C-CERAMIC,CHIP | 100nF,10%,16V,X7R,TP,2012 | |
| C310 | 2203-000203 | C-CERAMIC,CHIP | 100nF,10%,16V,X7R,TP,2012 | |
| C311 | 2203-000203 | C-CERAMIC,CHIP | 100nF,10%,16V,X7R,TP,2012 | |
| C312 | 2203-000203 | C-CERAMIC,CHIP | 100nF,10%,16V,X7R,TP,2012 | |
| C313 | 2203-000203 | C-CERAMIC,CHIP | 100nF,10%,16V,X7R,TP,2012 | |
| C314 | 2203-000203 | C-CERAMIC,CHIP | 100nF,10%,16V,X7R,TP,2012 | |
| C315 | 2203-000203 | C-CERAMIC,CHIP | 100nF,10%,16V,X7R,TP,2012 | |
| C316 | 2203-000203 | C-CERAMIC,CHIP | 100nF,10%,16V,X7R,TP,2012 | |
| C317 | 2203-000203 | C-CERAMIC,CHIP | 100nF,10%,16V,X7R,TP,2012 | |
| C318 | 2203-000203 | C-CERAMIC,CHIP | 100nF,10%,16V,X7R,TP,2012 | |
| C319 | 2203-000203 | C-CERAMIC,CHIP | 100nF,10%,16V,X7R,TP,2012 | |
| C320 | 2203-000203 | C-CERAMIC,CHIP | 100nF,10%,16V,X7R,TP,2012 | |
| C321 | 2203-000203 | C-CERAMIC,CHIP | 100nF,10%,16V,X7R,TP,2012 | |
| C322 | 2203-000203 | C-CERAMIC,CHIP | 100nF,10%,16V,X7R,TP,2012 | |
| C323 | 2203-001723 | C-CERAMIC,CHIP | 4.7pF,5%,50V,NPO,TP,2012 | |
| C324 | 2203-000203 | C-CERAMIC,CHIP | 100nF,10%,16V,X7R,TP,2012 | |
| C325 | 2203-000203 | C-CERAMIC,CHIP | 100nF,10%,16V,X7R,TP,2012 | |
| C326 | 2203-000203 | C-CERAMIC,CHIP | 100nF,10%,16V,X7R,TP,2012 | |
| C327 | 2203-000203 | C-CERAMIC,CHIP | 100nF,10%,16V,X7R,TP,2012 | |
| C328 | 2203-000203 | C-CERAMIC,CHIP | 100nF,10%,16V,X7R,TP,2012 | |
| C329 | 2203-000203 | C-CERAMIC,CHIP | 100nF,10%,16V,X7R,TP,2012 | |
| C330 | 2203-000203 | C-CERAMIC,CHIP | 100nF,10%,16V,X7R,TP,2012 | |
| C331 | 2203-000203 | C-CERAMIC,CHIP | 100nF,10%,16V,X7R,TP,2012 | |
| C332 | 2203-000203 | C-CERAMIC,CHIP | 100nF,10%,16V,X7R,TP,2012 | |
| C333 | 2203-000203 | C-CERAMIC,CHIP | 100nF,10%,16V,X7R,TP,2012 | |
| C334 | 2203-000203 | C-CERAMIC,CHIP | 100nF,10%,16V,X7R,TP,2012 | |
| C335 | 2203-000203 | C-CERAMIC,CHIP | 100nF,10%,16V,X7R,TP,2012 | |
| C336 | 2203-000203 | C-CERAMIC,CHIP | 100nF,10%,16V,X7R,TP,2012 | |
| C337 | 2203-000203 | C-CERAMIC,CHIP | 100nF,10%,16V,X7R,TP,2012 | |
| C338 | 2203-000203 | C-CERAMIC,CHIP | 100nF,10%,16V,X7R,TP,2012 | |
| C339 | 2203-000203 | C-CERAMIC,CHIP | 100nF,10%,16V,X7R,TP,2012 | |
| C340 | 2203-000203 | C-CERAMIC,CHIP | 100nF,10%,16V,X7R,TP,2012 | |
| C341 | 2203-000203 | C-CERAMIC,CHIP | 100nF,10%,16V,X7R,TP,2012 | |
| C342 | 2203-000203 | C-CERAMIC,CHIP | 100nF,10%,16V,X7R,TP,2012 | |

| Loc. No. | Code No. | Description | Specification | Remarks |
|---|---|---|---|---|
| C343 | 2203-000203 | C-CERAMIC,CHIP | 100nF,10%,16V,X7R,TP,2012 | |
| C344 | 2203-000203 | C-CERAMIC,CHIP | 100nF,10%,16V,X7R,TP,2012 | |
| C345 | 2203-000203 | C-CERAMIC,CHIP | 100nF,10%,16V,X7R,TP,2012 | |
| C346 | 2203-000203 | C-CERAMIC,CHIP | 100nF,10%,16V,X7R,TP,2012 | |
| C347 | 2203-000203 | C-CERAMIC,CHIP | 100nF,10%,16V,X7R,TP,2012 | |
| C348 | 2203-000203 | C-CERAMIC,CHIP | 100nF,10%,16V,X7R,TP,2012 | |
| C349 | 2203-000203 | C-CERAMIC,CHIP | 100nF,10%,16V,X7R,TP,2012 | |
| C350 | 2203-000203 | C-CERAMIC,CHIP | 100nF,10%,16V,X7R,TP,2012 | |
| C351 | 2203-000203 | C-CERAMIC,CHIP | 100nF,10%,16V,X7R,TP,2012 | |
| C352 | 2203-000203 | C-CERAMIC,CHIP | 100nF,10%,16V,X7R,TP,2012 | |
| C353 | 2203-000203 | C-CERAMIC,CHIP | 100nF,10%,16V,X7R,TP,2012 | |
| C354 | 2203-000203 | C-CERAMIC,CHIP | 100nF,10%,16V,X7R,TP,2012 | |
| C355 | 2203-000203 | C-CERAMIC,CHIP | 100nF,10%,16V,X7R,TP,2012 | |
| C356 | 2203-000203 | C-CERAMIC,CHIP | 100nF,10%,16V,X7R,TP,2012 | |
| C357 | 2203-000203 | C-CERAMIC,CHIP | 100nF,10%,16V,X7R,TP,2012 | |
| C358 | 2203-000203 | C-CERAMIC,CHIP | 100nF,10%,16V,X7R,TP,2012 | |
| C359 | 2203-000203 | C-CERAMIC,CHIP | 100nF,10%,16V,X7R,TP,2012 | |
| C360 | 2203-000203 | C-CERAMIC,CHIP | 100nF,10%,16V,X7R,TP,2012 | |
| C361 | 2203-000203 | C-CERAMIC,CHIP | 100nF,10%,16V,X7R,TP,2012 | |
| C362 | 2203-000203 | C-CERAMIC,CHIP | 100nF,10%,16V,X7R,TP,2012 | |
| C363 | 2203-000203 | C-CERAMIC,CHIP | 100nF,10%,16V,X7R,TP,2012 | |
| C364 | 2404-000123 | C-TA,CHIP | 10uF,20%,16V,TP,6032,2.9mm | |
| C365 | 2203-000203 | C-CERAMIC,CHIP | 100nF,10%,16V,X7R,TP,2012 | |
| C366 | 2203-000203 | C-CERAMIC,CHIP | 100nF,10%,16V,X7R,TP,2012 | |
| C367 | 2203-000818 | C-CERAMIC,CHIP | 33pF,5%,50V,NPO,TP,2012 | |
| C368 | 2203-000818 | C-CERAMIC,CHIP | 33pF,5%,50V,NPO,TP,2012 | |
| C369 | 2404-000151 | C-TA,CHIP | 1uF,20%,16V,TP,3216 | |
| C370 | 2404-000151 | C-TA,CHIP | 1uF,20%,16V,TP,3216 | |
| C371 | 2404-000123 | C-TA,CHIP | 10uF,20%,16V,TP,6032,2.9mm | |
| C372 | 2203-000260 | C-CERAMIC,CHIP | 10nF,10%,50V,X7R,TP,2012 | |
| C373 | 2404-000123 | C-TA,CHIP | 10uF,20%,16V,TP,6032,2.9mm | |
| C374 | 2203-000203 | C-CERAMIC,CHIP | 100nF,10%,16V,X7R,TP,2012 | |
| C377 | 2404-000123 | C-TA,CHIP | 10uF,20%,16V,TP,6032,2.9mm | |
| C378 | 2203-000260 | C-CERAMIC,CHIP | 10nF,10%,50V,X7R,TP,2012 | |
| C379 | 2404-000123 | C-TA,CHIP | 10uF,20%,16V,TP,6032,2.9mm | |
| C380 | 2203-000260 | C-CERAMIC,CHIP | 10nF,10%,50V,X7R,TP,2012 | |
| C381 | 2404-000123 | C-TA,CHIP | 10uF,20%,16V,TP,6032,2.9mm | |
| C382 | 2203-000260 | C-CERAMIC,CHIP | 10nF,10%,50V,X7R,TP,2012 | |
| C383 | 2404-000123 | C-TA,CHIP | 10uF,20%,16V,TP,6032,2.9mm | |
| C384 | 2203-000260 | C-CERAMIC,CHIP | 10nF,10%,50V,X7R,TP,2012 | |
| C385 | 2404-000123 | C-TA,CHIP | 10uF,20%,16V,TP,6032,2.9mm | |
| C386 | 2203-000260 | C-CERAMIC,CHIP | 10nF,10%,50V,X7R,TP,2012 | |
| C387 | 2404-000123 | C-TA,CHIP | 10uF,20%,16V,TP,6032,2.9mm | |
| C388 | 2203-000260 | C-CERAMIC,CHIP | 10nF,10%,50V,X7R,TP,2012 | |
| C389 | 2203-000203 | C-CERAMIC,CHIP | 100nF,10%,16V,X7R,TP,2012 | |
| C390 | 2203-000203 | C-CERAMIC,CHIP | 100nF,10%,16V,X7R,TP,2012 | |
| C391 | 2203-000455 | C-CERAMIC,CHIP | 1nF,5%,50V,NPO,TP,2012 | |

| Loc. No. | Code No. | Description | Specification | Remarks |
|---|---|---|---|---|
| C392 | 2203-000203 | C-CERAMIC,CHIP | 100nF,10%,16V,X7R,TP,2012 | |
| C393 | 2203-000455 | C-CERAMIC,CHIP | 1nF,5%,50V,NPO,TP,2012 | |
| C394 | 2203-000203 | C-CERAMIC,CHIP | 100nF,10%,16V,X7R,TP,2012 | |
| C395 | 2203-000455 | C-CERAMIC,CHIP | 1nF,5%,50V,NPO,TP,2012 | |
| C396 | 2203-000203 | C-CERAMIC,CHIP | 100nF,10%,16V,X7R,TP,2012 | |
| C397 | 2203-000455 | C-CERAMIC,CHIP | 1nF,5%,50V,NPO,TP,2012 | |
| C398 | 2203-000203 | C-CERAMIC,CHIP | 100nF,10%,16V,X7R,TP,2012 | |
| C401 | 2203-000260 | C-CERAMIC,CHIP | 10nF,10%,50V,X7R,TP,2012 | |
| C402 | 2404-000123 | C-TA,CHIP | 10uF,20%,16V,TP,6032,2.9mm | |
| C403 | 2203-000260 | C-CERAMIC,CHIP | 10nF,10%,50V,X7R,TP,2012 | |
| C404 | 2404-000123 | C-TA,CHIP | 10uF,20%,16V,TP,6032,2.9mm | |
| C405 | 2203-000455 | C-CERAMIC,CHIP | 1nF,5%,50V,NPO,TP,2012 | |
| C406 | 2404-000123 | C-TA,CHIP | 10uF,20%,16V,TP,6032,2.9mm | |
| C407 | 2203-000203 | C-CERAMIC,CHIP | 100nF,10%,16V,X7R,TP,2012 | |
| C408 | 2402-000168 | C-AL,SMD | 100uF,20%,16V,TP,8x6.3 | |
| C409 | 2404-000123 | C-TA,CHIP | 10uF,20%,16V,TP,6032,2.9mm | |
| C410 | 2203-000260 | C-CERAMIC,CHIP | 10nF,10%,50V,X7R,TP,2012 | |
| C411 | 2203-000203 | C-CERAMIC,CHIP | 100nF,10%,16V,X7R,TP,2012 | |
| C412 | 2404-000123 | C-TA,CHIP | 10uF,20%,16V,TP,6032,2.9mm | |
| C413 | 2203-000555 | C-CERAMIC,CHIP | 20pF,5%,50V,NPO,TP,2012 | |
| C414 | 2203-000555 | C-CERAMIC,CHIP | 20pF,5%,50V,NPO,TP,2012 | |
| C415 | 2404-000123 | C-TA,CHIP | 10uF,20%,16V,TP,6032,2.9mm | |
| C416 | 2203-000260 | C-CERAMIC,CHIP | 10nF,10%,50V,X7R,TP,2012 | |
| C417 | 2203-000239 | C-CERAMIC,CHIP | 100pF,5%,50V,NPO,TP,2012 | |
| C418 | 2203-000260 | C-CERAMIC,CHIP | 10nF,10%,50V,X7R,TP,2012 | |
| C419 | 2404-000123 | C-TA,CHIP | 10uF,20%,16V,TP,6032,2.9mm | |
| CFT302 | 2901-001115 | FILTER-EMI SMD | 50VDC,500mADC,20pF,3.1x | |
| CFT317 | 2901-001112 | FILTER-EMI SMD | 50VDC,1.0ADC,85pF+-20% | |
| CFT318 | 2901-001115 | FILTER-EMI SMD | 50VDC,500mADC,20pF,3.1x | |
| CFT319 | 2901-001112 | FILTER-EMI SMD | 50VDC,1.0ADC,85pF+-20% | |
| CIS | BN13-10001D | IC-HYBRID/INVERTER | LXB310T,SIC180,IN | |
| CL101 | BN27-20001C | COIL-SMD | 105UH,20%,SMD,TAPING | |
| CL102 | BN27-20001A | COIL-CHOKE | 53.0UH,20%,DR10*5,TRAY | |
| CN101 | 3701-001117 | CONNECTOR-DSUB | 26P,2R,FEMALE,ANGLE,AU | |
| CN102 | 3722-000117 | JACK-DC POWER | 3P,3.5mm,AG,BLK,NO | |
| CN103 | 3711-000556 | CONNECTOR-HEADER | BOX,12P,1R,1.25mm,SMD-A | |
| CN103_PANEL | BN39-40001B | CBF-HARNESS | 12P/6P,100MM,BLU/WHT/BLK,UL1 | 13.3” |
| | BN39-40001G | CBF-HARNESS | 12P,200MM,BLU/WHT/RED.UL1571 | 15” |
| CN301 | 3711-003161 | CONNECTOR-HEADER | BOX,20P,1R,1.25mm,ANGLE | |
| CN301_PANEL | BN39-40001K | CBF-HARNESS | 20P,200MM,BLK,UL2835,AWG28(2 | 13.3” |
| | BN39-40001J | CBF-HARNESS | 20P,170MM,BLK,UL2835,AWG28-20C | 15” |
| CN401 | 3711-001031 | CONNECTOR-HEADER | BOX,6P,1R,2.50mm,ANGLE | |
| CN401_CN861 | BN39-40001E | CBF-HARNESS | 6P,280MM,BLK,UL2464,AWG24-6C | |
| D101 | 0401-000191 | DIODE-SWITCHING | MMBD4148,50V,DL-35,TP | |
| D102 | 0401-000191 | DIODE-SWITCHING | MMBD4148,50V,DL-35,TP | |
| D103 | 0401-000191 | DIODE-SWITCHING | MMBD4148,50V,DL-35,TP | |
| D104 | 0401-000191 | DIODE-SWITCHING | MMBD4148,50V,DL-35,TP | |

| Loc. No. | Code No. | Description | Specification | Remarks |
|---|---|---|---|---|
| D105 | 0401-000191 | DIODE-SWITCHING | MMBD4148,50V,DL-35,TP | |
| D106 | 0401-000191 | DIODE-SWITCHING | MMBD4148,50V,DL-35,TP | |
| D109 | 0401-000191 | DIODE-SWITCHING | MMBD4148,50V,DL-35,TP | |
| D110 | 0401-000191 | DIODE-SWITCHING | MMBD4148,50V,DL-35,TP | |
| D113 | 0402-000016 | DIODE-RECTIFIER | UF5404,400V,3A,DO-201AD | |
| D114 | 0402-000016 | DIODE-RECTIFIER | UF5404,400V,3A,DO-201AD | |
| D401 | 0401-000191 | DIODE-SWITCHING | MMBD4148,50V,DL-35,TP | |
| D402 | 0401-000191 | DIODE-SWITCHING | MMBD4148,50V,DL-35,TP | |
| D403 | 0401-000191 | DIODE-SWITCHING | MMBD4148,50V,DL-35,TP | |
| D404 | 0401-000191 | DIODE-SWITCHING | MMBD4148,50V,DL-35,TP | |
| F101 | 3601-001061 | FUSE-SMD | 125V,10A,FAST ACTING,CERAMIC,6 | |
| FT101 | 2901-001114 | FILTER-EMI SMD | 25VDC,2.0ADC,100nF,3.2x | |
| FT102 | 2901-001114 | FILTER-EMI SMD | 25VDC,2.0ADC,100nF,3.2x | |
| FT103 | 2901-001114 | FILTER-EMI SMD | 25VDC,2.0ADC,100nF,3.2x | |
| FT120 | 2901-001114 | FILTER-EMI SMD | 25VDC,2.0ADC,100nF,3.2x | |
| FT122 | 2901-000172 | FILTER-EMI ON BOARD | 50V,10A,-,12x11x13 | |
| FT301 | 2901-001114 | FILTER-EMI SMD | 25VDC,2.0ADC,100nF,3.2x | |
| FT306 | 2901-001114 | FILTER-EMI SMD | 25VDC,2.0ADC,100nF,3.2x | |
| FT307 | 2901-001114 | FILTER-EMI SMD | 25VDC,2.0ADC,100nF,3.2x | |
| FT308 | 2901-001114 | FILTER-EMI SMD | 25VDC,2.0ADC,100nF,3.2x | |
| FT309 | 2901-001114 | FILTER-EMI SMD | 25VDC,2.0ADC,100nF,3.2x | |
| FT310 | 2901-001114 | FILTER-EMI SMD | 25VDC,2.0ADC,100nF,3.2x | |
| FT311 | 2901-001114 | FILTER-EMI SMD | 25VDC,2.0ADC,100nF,3.2x | |
| FT312 | 2901-001114 | FILTER-EMI SMD | 25VDC,2.0ADC,100nF,3.2x | |
| FT313 | 2901-001114 | FILTER-EMI SMD | 25VDC,2.0ADC,100nF,3.2x | |
| FT314 | 2901-001114 | FILTER-EMI SMD | 25VDC,2.0ADC,100nF,3.2x | |
| FT315 | 2901-001114 | FILTER-EMI SMD | 25VDC,2.0ADC,100nF,3.2x | |
| FT316 | 2901-001114 | FILTER-EMI SMD | 25VDC,2.0ADC,100nF,3.2x | |
| FT320 | 2901-001113 | FILTER-EMI SMD | 25VDC,0.2A,35pF+-20%,2x | |
| FT321 | 2901-001113 | FILTER-EMI SMD | 25VDC,0.2A,35pF+-20%,2x | |
| FT322 | 2901-001113 | FILTER-EMI SMD | 25VDC,0.2A,35pF+-20%,2x | |
| FT323 | 2901-001113 | FILTER-EMI SMD | 25VDC,0.2A,35pF+-20%,2x | |
| FT324 | 2901-001113 | FILTER-EMI SMD | 25VDC,0.2A,35pF+-20%,2x | |
| FT325 | 2901-001113 | FILTER-EMI SMD | 25VDC,0.2A,35pF+-20%,2x | |
| FT326 | 2901-001113 | FILTER-EMI SMD | 25VDC,0.2A,35pF+-20%,2x | |
| FT327 | 2901-001113 | FILTER-EMI SMD | 25VDC,0.2A,35pF+-20%,2x | |
| FT328 | 2901-001113 | FILTER-EMI SMD | 25VDC,0.2A,35pF+-20%,2x | |
| FT329 | 2901-001113 | FILTER-EMI SMD | 25VDC,0.2A,35pF+-20%,2x | |
| FT330 | 2901-001113 | FILTER-EMI SMD | 25VDC,0.2A,35pF+-20%,2x | |
| FT331 | 2901-001113 | FILTER-EMI SMD | 25VDC,0.2A,35pF+-20%,2x | |
| FT332 | 2901-001113 | FILTER-EMI SMD | 25VDC,0.2A,35pF+-20%,2x | |
| FT333 | 2901-001113 | FILTER-EMI SMD | 25VDC,0.2A,35pF+-20%,2x | |
| FT334 | 2901-001113 | FILTER-EMI SMD | 25VDC,0.2A,35pF+-20%,2x | |
| FT335 | 2901-001113 | FILTER-EMI SMD | 25VDC,0.2A,35pF+-20%,2x | |
| FT390 | 2901-001114 | FILTER-EMI SMD | 25VDC,2.0ADC,100nF,3.2x | |
| FT404 | 2901-001114 | FILTER-EMI SMD | 25VDC,2.0ADC,100nF,3.2x | |
| IC101 | 1002-001099 | IC-A/D CONVERTER | TDA8752,8BIT,QFP,100P | |

| Loc. No. | Code No. | Description | Specification | Remarks |
|---|---|---|---|---|
| IC102 | 1203-000001 | IC-POSI.FIXED REG. | 7805,TO-220,3P,PLAS | |
| IC103 | 1203-000001 | IC-POSI.FIXED REG. | 7805,TO-220,3P,PLAS | |
| IC104 | 1204-000292 | IC-VIDEO SYSTEM | LM1881M,SOP,8P,150MIL,PL | |
| IC105 | 0803-000117 | IC-TTL | 74F14,INVERTER,SOP,14P,150MIL | |
| IC106 | 0803-000122 | IC-TTL | 74F125,BUFFER,SOP,14P,150MIL,Q | |
| IC107 | 1203-001448 | IC-POSI.FIXED REG. | 2596,TO-263,5P,PLAS | |
| IC108 | 1203-001447 | IC-POSI.FIXED REG. | 2596,TO-263,5P,PLAS | |
| IC109 | 1203-000001 | IC-POSI.FIXED REG. | 7805,TO-220,3P,PLAS | |
| IC110 | BN13-10001B | IC-ASIC | LXB530T,DLY-D1,SOP,16P,H/V POS | |
| IC115 | 1203-001538 | IC-POSI.ADJUST REG. | 431,SOT-89,3P,PLAS | |
| IC301 | 1205-001407 | IC-BUFFER | GMFC1,QFP,208P,PLASTIC,3.6V | |
| IC302 | 1105-001165 | IC-DRAM | 416S1020B,2x512Kx16BIT,SOP,50P | |
| IC303 | 1105-001165 | IC-DRAM | 416S1020B,2x512Kx16BIT,SOP,50P | |
| IC304 | 1105-001165 | IC-DRAM | 416S1020B,2x512Kx16BIT,SOP,50P | |
| IC305 | 0904-001222 | IC-GRAPHIC CONT. | GMZ1,QFP,208P,65MHz | |
| IC306 | 0801-000757 | IC-CMOS LOGIC | 74FCT244,BUFFER,SOP,20P,30 | |
| IC307 | 1204-001251 | IC-OSD PROCESSOR | MC141544DWR2,SOP,24P,15 | |
| IC308 | 0802-001038 | IC-BICMOS LOGIC | 74FCT573T,TRANSPARENT LA | |
| IC309 | 0505-001170 | FET-SILICON | SI9933ADY-T1,P,-20V,3.4A,0.0 | |
| IC310 | 1003-001023 | IC-VFD | DS90CF561,DIP,48P,600MIL,SINGL | |
| IC311 | 1003-001023 | IC-VFD | DS90CF561,DIP,48P,600MIL,SINGL | |
| IC401 | 0903-001063 | IC-MICROCONTROLLER | 72E75,8BIT,DIP,42P,60 | |
| IC401_SOCK | 3704-001071 | SOCKET-IC | 42P,DIP,SN,1.778mm | |
| IC402 | 1203-001109 | IC-VOL. DETECTOR | 7045,SOT-89,3P,PLASTI | |
| IC403 | 1103-001009 | IC-EEPROM | 24LC211,128X8BIT,DIP,8P,300MIL | |
| IC404 | 1103-001086 | IC-EEPROM | 24LC08B,256x8BIT,DIP,8P,300MIL | |
| IC405 | BN13-10001A | IC-ASIC | LXB320T,A40MX04-PL44C,PLCC,44P | |
| IC406 | 0803-000122 | IC-TTL | 74F125,BUFFER,SOP,14P,150MIL,Q | |
| IC803 | 1201-001269 | IC-AUDIO AMP | 4863,DIP,16P,300MIL,DUAL | |
| IC804 | 1203-001161 | IC-POSI.FIXED REG. | 2576,TO-220,5P,PLAS | |
| L102 | 2703-001070 | INDUCTOR-SMD | 100uH,10%,4.5x3.2x3.2mm | |
| L151 | 2703-001070 | INDUCTOR-SMD | 100uH,10%,4.5x3.2x3.2mm | |
| L152 | 2703-001070 | INDUCTOR-SMD | 100uH,10%,4.5x3.2x3.2mm | |
| L153 | 2703-001070 | INDUCTOR-SMD | 100uH,10%,4.5x3.2x3.2mm | |
| L160 | 2703-001070 | INDUCTOR-SMD | 100uH,10%,4.5x3.2x3.2mm | |
| L170 | 2703-001070 | INDUCTOR-SMD | 100uH,10%,4.5x3.2x3.2mm | |
| L171 | 2703-001070 | INDUCTOR-SMD | 100uH,10%,4.5x3.2x3.2mm | |
| L172 | 2703-001070 | INDUCTOR-SMD | 100uH,10%,4.5x3.2x3.2mm | |
| L301 | 2703-001070 | INDUCTOR-SMD | 100uH,10%,4.5x3.2x3.2mm | |
| L302 | 2703-001070 | INDUCTOR-SMD | 100uH,10%,4.5x3.2x3.2mm | |
| L303 | 2703-001070 | INDUCTOR-SMD | 100uH,10%,4.5x3.2x3.2mm | |
| L403 | 2703-001070 | INDUCTOR-SMD | 100uH,10%,4.5x3.2x3.2mm | |
| L406 | 2703-001070 | INDUCTOR-SMD | 100uH,10%,4.5x3.2x3.2mm | |
| L407 | 2703-001070 | INDUCTOR-SMD | 100uH,10%,4.5x3.2x3.2mm | |
| Q101 | 0504-000152 | TR-DIGITAL | KSR2101,PNP,200MW,4.7K-4.7K,S | |
| Q301 | 0501-000342 | TR-SMALL SIGNAL | KSC1623-Y,NPN,200mW,SOT- | |
| Q302 | 0501-000342 | TR-SMALL SIGNAL | KSC1623-Y,NPN,200mW,SOT- | |

| Loc. No. | Code No. | Description | Specification | Remarks |
|---|---|---|---|---|
| Q401 | 0501-000342 | TR-SMALL SIGNAL | KSC1623-Y,NPN,200mW,SOT- | |
| R101 | 2007-001166 | R-CHIP | 75ohm,5%,1/10W,DA,TP,2012 | |
| R102 | 2007-001166 | R-CHIP | 75ohm,5%,1/10W,DA,TP,2012 | |
| R103 | 2007-001166 | R-CHIP | 75ohm,5%,1/10W,DA,TP,2012 | |
| R104 | 2007-000781 | R-CHIP | 33ohm,5%,1/10W,DA,TP,2012 | |
| R105 | 2007-000781 | R-CHIP | 33ohm,5%,1/10W,DA,TP,2012 | |
| R106 | 2007-000781 | R-CHIP | 33ohm,5%,1/10W,DA,TP,2012 | |
| R107 | 2007-000493 | R-CHIP | 2.2Kohm,5%,1/10W,DA,TP,2012 | |
| R110 | 2007-000290 | R-CHIP | 100ohm,5%,1/10W,DA,TP,2012 | |
| R115 | 2007-000593 | R-CHIP | 22ohm,5%,1/10W,DA,TP,2012 | |
| R116 | 2007-000593 | R-CHIP | 22ohm,5%,1/10W,DA,TP,2012 | |
| R117 | 2007-001118 | R-CHIP | 680ohm,5%,1/10W,DA,TP,2012 | |
| R118 | 2007-000593 | R-CHIP | 22ohm,5%,1/10W,DA,TP,2012 | |
| R124 | 2007-000593 | R-CHIP | 22ohm,5%,1/10W,DA,TP,2012 | |
| R125 | 2007-000593 | R-CHIP | 22ohm,5%,1/10W,DA,TP,2012 | |
| R127 | 2007-000300 | R-CHIP | 10Kohm,5%,1/10W,DA,TP,2012 | |
| R128 | 2007-000290 | R-CHIP | 100ohm,5%,1/10W,DA,TP,2012 | |
| R129 | 2007-000822 | R-CHIP | 390ohm,5%,1/10W,DA,TP,2012 | |
| R130 | 2007-000290 | R-CHIP | 100ohm,5%,1/10W,DA,TP,2012 | |
| R131 | 2007-000290 | R-CHIP | 100ohm,5%,1/10W,DA,TP,2012 | |
| R132 | 2007-000029 | R-CHIP | 0ohm,5%,1/10W,DA,TP,2012 | |
| R134 | 2007-000300 | R-CHIP | 10Kohm,5%,1/10W,DA,TP,2012 | |
| R135 | 2007-000029 | R-CHIP | 0ohm,5%,1/10W,DA,TP,2012 | |
| R137 | 2007-000872 | R-CHIP | 4.7Kohm,5%,1/10W,DA,TP,2012 | |
| R138 | 2007-000872 | R-CHIP | 4.7Kohm,5%,1/10W,DA,TP,2012 | |
| R140 | 2007-000029 | R-CHIP | 0ohm,5%,1/10W,DA,TP,2012 | |
| R190 | 2007-000029 | R-CHIP | 0ohm,5%,1/10W,DA,TP,2012 | |
| R191 | 2007-000029 | R-CHIP | 0ohm,5%,1/10W,DA,TP,2012 | |
| R192 | 2007-001113 | R-CHIP | 680Kohm,5%,1/10W,DA,TP,2012 | |
| R193 | 2007-000029 | R-CHIP | 0ohm,5%,1/10W,DA,TP,2012 | |
| R194 | 2007-000872 | R-CHIP | 4.7Kohm,5%,1/10W,DA,TP,2012 | |
| R301 | 2007-000468 | R-CHIP | 1Kohm,5%,1/10W,DA,TP,2012 | |
| R302 | 2007-000468 | R-CHIP | 1Kohm,5%,1/10W,DA,TP,2012 | |
| R303 | 2007-000290 | R-CHIP | 100ohm,5%,1/10W,DA,TP,2012 | |
| R305 | 2007-000300 | R-CHIP | 10Kohm,5%,1/10W,DA,TP,2012 | |
| R306 | 2007-000290 | R-CHIP | 100ohm,5%,1/10W,DA,TP,2012 | |
| R307 | 2007-000290 | R-CHIP | 100ohm,5%,1/10W,DA,TP,2012 | |
| R308 | 2007-000282 | R-CHIP | 100Kohm,5%,1/10W,DA,TP,2012 | |
| R309 | 2007-000282 | R-CHIP | 100Kohm,5%,1/10W,DA,TP,2012 | |
| R310 | 2007-000300 | R-CHIP | 10Kohm,5%,1/10W,DA,TP,2012 | |
| R311 | 2007-000282 | R-CHIP | 100Kohm,5%,1/10W,DA,TP,2012 | |
| R312 | 2007-000300 | R-CHIP | 10Kohm,5%,1/10W,DA,TP,2012 | |
| R316 | 2007-000766 | R-CHIP | 330ohm,5%,1/10W,DA,TP,2012 | |
| R317 | 2007-000572 | R-CHIP | 220ohm,5%,1/10W,DA,TP,2012 | |
| R401 | 2007-000941 | R-CHIP | 47Kohm,5%,1/10W,DA,TP,2012 | |
| R402 | 2007-000941 | R-CHIP | 47Kohm,5%,1/10W,DA,TP,2012 | |
| R403 | 2007-000941 | R-CHIP | 47Kohm,5%,1/10W,DA,TP,2012 | |

| Loc. No. | Code No. | Description | Specification | Remarks |
|---|---|---|---|---|
| R404 | 2007-000941 | R-CHIP | 47Kohm,5%,1/10W,DA,TP,2012 | |
| R405 | 2007-000941 | R-CHIP | 47Kohm,5%,1/10W,DA,TP,2012 | |
| R406 | 2007-000941 | R-CHIP | 47Kohm,5%,1/10W,DA,TP,2012 | |
| R407 | 2007-000941 | R-CHIP | 47Kohm,5%,1/10W,DA,TP,2012 | |
| R408 | 2007-000941 | R-CHIP | 47Kohm,5%,1/10W,DA,TP,2012 | |
| R409 | 2007-000941 | R-CHIP | 47Kohm,5%,1/10W,DA,TP,2012 | |
| R410 | 2007-000872 | R-CHIP | 4.7Kohm,5%,1/10W,DA,TP,2012 | |
| R411 | 2007-000872 | R-CHIP | 4.7Kohm,5%,1/10W,DA,TP,2012 | |
| R412 | 2007-000941 | R-CHIP | 47Kohm,5%,1/10W,DA,TP,2012 | |
| R413 | 2007-000941 | R-CHIP | 47Kohm,5%,1/10W,DA,TP,2012 | |
| R415 | 2007-000941 | R-CHIP | 47Kohm,5%,1/10W,DA,TP,2012 | |
| R416 | 2007-000941 | R-CHIP | 47Kohm,5%,1/10W,DA,TP,2012 | |
| R417 | 2007-000290 | R-CHIP | 100ohm,5%,1/10W,DA,TP,2012 | |
| R418 | 2007-000290 | R-CHIP | 100ohm,5%,1/10W,DA,TP,2012 | |
| R419 | 2007-000290 | R-CHIP | 100ohm,5%,1/10W,DA,TP,2012 | |
| R420 | 2007-000290 | R-CHIP | 100ohm,5%,1/10W,DA,TP,2012 | |
| R421 | 2007-000290 | R-CHIP | 100ohm,5%,1/10W,DA,TP,2012 | |
| R422 | 2007-000290 | R-CHIP | 100ohm,5%,1/10W,DA,TP,2012 | |
| R423 | 2007-000290 | R-CHIP | 100ohm,5%,1/10W,DA,TP,2012 | |
| R424 | 2007-000290 | R-CHIP | 100ohm,5%,1/10W,DA,TP,2012 | |
| R425 | 2007-000290 | R-CHIP | 100ohm,5%,1/10W,DA,TP,2012 | |
| R426 | 2007-000290 | R-CHIP | 100ohm,5%,1/10W,DA,TP,2012 | |
| R427 | 2007-000300 | R-CHIP | 10Kohm,5%,1/10W,DA,TP,2012 | |
| R429 | 2007-000290 | R-CHIP | 100ohm,5%,1/10W,DA,TP,2012 | |
| R431 | 2007-000401 | R-CHIP | 150ohm,5%,1/10W,DA,TP,2012 | |
| R432 | 2007-000290 | R-CHIP | 100ohm,5%,1/10W,DA,TP,2012 | |
| R433 | 2007-000290 | R-CHIP | 100ohm,5%,1/10W,DA,TP,2012 | |
| R436 | 2007-000290 | R-CHIP | 100ohm,5%,1/10W,DA,TP,2012 | |
| R437 | 2007-000290 | R-CHIP | 100ohm,5%,1/10W,DA,TP,2012 | |
| R438 | 2007-000290 | R-CHIP | 100ohm,5%,1/10W,DA,TP,2012 | |
| R439 | 2007-000290 | R-CHIP | 100ohm,5%,1/10W,DA,TP,2012 | |
| R440 | 2007-000290 | R-CHIP | 100ohm,5%,1/10W,DA,TP,2012 | |
| R441 | 2007-000290 | R-CHIP | 100ohm,5%,1/10W,DA,TP,2012 | |
| R442 | 2007-000290 | R-CHIP | 100ohm,5%,1/10W,DA,TP,2012 | |
| R443 | 2007-000290 | R-CHIP | 100ohm,5%,1/10W,DA,TP,2012 | |
| R444 | 2007-000290 | R-CHIP | 100ohm,5%,1/10W,DA,TP,2012 | |
| R445 | 2007-000290 | R-CHIP | 100ohm,5%,1/10W,DA,TP,2012 | |
| R447 | 2007-000290 | R-CHIP | 100ohm,5%,1/10W,DA,TP,2012 | |
| R448 | 2007-000290 | R-CHIP | 100ohm,5%,1/10W,DA,TP,2012 | |
| R449 | 2007-000468 | R-CHIP | 1Kohm,5%,1/10W,DA,TP,2012 | |
| R450 | 2007-000686 | R-CHIP | 3.3Kohm,5%,1/10W,DA,TP,2012 | |
| R451 | 2007-000686 | R-CHIP | 3.3Kohm,5%,1/10W,DA,TP,2012 | |
| R452 | 2007-000468 | R-CHIP | 1Kohm,5%,1/10W,DA,TP,2012 | |
| R455 | 2007-000477 | R-CHIP | 1Mohm,5%,1/10W,DA,TP,2012 | |
| R456 | 2007-000572 | R-CHIP | 220ohm,5%,1/10W,DA,TP,2012 | |
| R457 | 2007-000290 | R-CHIP | 100ohm,5%,1/10W,DA,TP,2012 | |
| R458 | 2007-000290 | R-CHIP | 100ohm,5%,1/10W,DA,TP,2012 | |

| Loc. No. | Code No. | Description | Specification | Remarks |
|---|---|---|---|---|
| R459 | 2007-000409 | R-CHIP | 15Kohm,5%,1/10W,DA,TP,2012 | |
| R460 | 2007-000409 | R-CHIP | 15Kohm,5%,1/10W,DA,TP,2012 | |
| R461 | 2007-000290 | R-CHIP | 100ohm,5%,1/10W,DA,TP,2012 | |
| R462 | 2007-000290 | R-CHIP | 100ohm,5%,1/10W,DA,TP,2012 | |
| R463 | 2007-000290 | R-CHIP | 100ohm,5%,1/10W,DA,TP,2012 | |
| R464 | 2007-000300 | R-CHIP | 10Kohm,5%,1/10W,DA,TP,2012 | |
| R465 | 2007-000941 | R-CHIP | 47Kohm,5%,1/10W,DA,TP,2012 | |
| RA101 | 2011-000002 | R-NETWORK | 22ohm,5%,1/16W,L,CHIP,8P,TP | |
| RA102 | 2011-000002 | R-NETWORK | 22ohm,5%,1/16W,L,CHIP,8P,TP | |
| RA103 | 2011-000002 | R-NETWORK | 22ohm,5%,1/16W,L,CHIP,8P,TP | |
| RA104 | 2011-000002 | R-NETWORK | 22ohm,5%,1/16W,L,CHIP,8P,TP | |
| RA105 | 2011-000002 | R-NETWORK | 22ohm,5%,1/16W,L,CHIP,8P,TP | |
| RA106 | 2011-000002 | R-NETWORK | 22ohm,5%,1/16W,L,CHIP,8P,TP | |
| RA107 | 2011-001015 | R-NETWORK | 1Kohm,5%,1/16W,L,CHIP,8P,TP | |
| RA108 | 2011-001015 | R-NETWORK | 1Kohm,5%,1/16W,L,CHIP,8P,TP | |
| RA109 | 2011-001015 | R-NETWORK | 1Kohm,5%,1/16W,L,CHIP,8P,TP | |
| RA110 | 2011-001015 | R-NETWORK | 1Kohm,5%,1/16W,L,CHIP,8P,TP | |
| RA111 | 2011-001015 | R-NETWORK | 1Kohm,5%,1/16W,L,CHIP,8P,TP | |
| RA112 | 2011-001015 | R-NETWORK | 1Kohm,5%,1/16W,L,CHIP,8P,TP | |
| RA301 | 2011-000002 | R-NETWORK | 22ohm,5%,1/16W,L,CHIP,8P,TP | |
| RA302 | 2011-000002 | R-NETWORK | 22ohm,5%,1/16W,L,CHIP,8P,TP | |
| RA303 | 2011-000002 | R-NETWORK | 22ohm,5%,1/16W,L,CHIP,8P,TP | |
| RA304 | 2011-000002 | R-NETWORK | 22ohm,5%,1/16W,L,CHIP,8P,TP | |
| RA305 | 2011-000002 | R-NETWORK | 22ohm,5%,1/16W,L,CHIP,8P,TP | |
| RL101 | 3501-000322 | RELAY-POWER | 5V,200mW,8A,1FormA1B,10mS,10 | |
| SW301 | 3408-001027 | SWITCH-SLIDE | 30VDC,0.3A,1C2P,<OFF-ON> | |
| VR843 | 2101-001041 | VR-ROTARY | 50Kohm,20%,1/20W,TOP | |
| X301 | 2804-001217 | OSCILLATOR-CLOCK | 67MHz,100ppm,10TTL & CM | |
| X302 | 2804-001164 | OSCILLATOR-CLOCK | 85MHz,100ppm,10TTL(15pF | |
| X401 | 2801-003611 | CRYSTAL-UNIT | 24MHz,30ppm,28-AAA,20pF,50o | |
| ZD101 | 0403-000579 | DIODE-ZENER | BZX84C5V1,5.1V,5%,330mW,SOT- | |
| ZD102 | 0403-000579 | DIODE-ZENER | BZX84C5V1,5.1V,5%,330mW,SOT- | |
| ZD103 | 0403-000579 | DIODE-ZENER | BZX84C5V1,5.1V,5%,330mW,SOT- | |
| ZD104 | 0403-000579 | DIODE-ZENER | BZX84C5V1,5.1V,5%,330mW,SOT- | |
| ZD105 | 0403-000579 | DIODE-ZENER | BZX84C5V1,5.1V,5%,330mW,SOT- | |
| ZD401 | 0403-000579 | DIODE-ZENER | BZX84C5V1,5.1V,5%,330mW,SOT- | |

## 9-2 Sub PCB Parts

| Loc. No. | Code No. | Description | Specification | Remarks |
|---|---|---|---|---|
| BD801 | 3301-000011 | CORE-FERRITE BEAD | AA,3.5x1.0x5.7mm,1500,2375G | |
| BD802 | 3301-000011 | CORE-FERRITE BEAD | AA,3.5x1.0x5.7mm,1500,2375G | |
| BD803 | 3301-000011 | CORE-FERRITE BEAD | AA,3.5x1.0x5.7mm,1500,2375G | |
| C801 | 2401-000164 | C-AL | 1000uF,20%,25V,WT,12.5x20mm,5m | |
| C802 | 2201-000177 | C-CERAMIC,DISC | 10nF,10%,50V,Y5P,12.5X4.0,5,TP | |
| C803 | 2301-000016 | C-FILM,PEF | 22nF,5%,100V,7.2x4.5x9.0mm,5mm | |
| C804 | 2401-000613 | C-AL | 1uF,20%,50V,WT,5x11mm,5mm,TP | |
| C810 | 2305-000624 | C-FILM,MPEF | 330nF,10%,100V,5mm,TP | |
| C811 | 2305-000624 | C-FILM,MPEF | 330nF,10%,100V,5mm,TP | |
| C812 | 2305-000624 | C-FILM,MPEF | 330nF,10%,100V,5mm,TP | |
| C813 | 2301-000184 | C-FILM,PEF | 1nF,10%,100V,5.3x10mm,5mm,TP | |
| C814 | 2401-000613 | C-AL | 1uF,20%,50V,WT,5x11mm,5mm,TP | |
| C815 | 2401-001334 | C-AL | 470nF,20%,50V,GP,5x11mm,2mm,TP | |
| C816 | 2401-000310 | C-AL | 100uF,20%,25V,GP,8x11.5mm,3.5m | |
| C820 | 2401-000042 | C-AL | 100uF,20%,16V,GP,6.3x7mm,2.5mm | |
| C841 | 2301-000012 | C-FILM,PEF | 2.2nF,5%,100V,10.5x12.5x6.5,5m | |
| C842 | 2301-000012 | C-FILM,PEF | 2.2nF,5%,100V,10.5x12.5x6.5,5m | |
| C843 | 2301-000016 | C-FILM,PEF | 22nF,5%,100V,7.2x4.5x9.0mm,5mm | |
| C844 | 2301-000016 | C-FILM,PEF | 22nF,5%,100V,7.2x4.5x9.0mm,5mm | |
| C845 | 2301-000016 | C-FILM,PEF | 22nF,5%,100V,7.2x4.5x9.0mm,5mm | |
| C846 | 2301-000016 | C-FILM,PEF | 22nF,5%,100V,7.2x4.5x9.0mm,5mm | |
| C847 | 2301-000380 | C-FILM,PEF | 10nF,5%,50V,TP,6.5x3mm,5mm | |
| C848 | 2301-000380 | C-FILM,PEF | 10nF,5%,50V,TP,6.5x3mm,5mm | |
| C849 | 2301-000380 | C-FILM,PEF | 10nF,5%,50V,TP,6.5x3mm,5mm | |
| C850 | 2301-000380 | C-FILM,PEF | 10nF,5%,50V,TP,6.5x3mm,5mm | |
| CN801 | 3721-001006 | PLUG-AC POWER | 3P,10/24mm,SN | ⚠ |
| CN803 | 3722-000117 | JACK-DC POWER | 3P,3.5MM,AG,BLK,NO | |
| CN804 | 3711-000211 | CONNECTOR-HEADER | 1WALL,3P,1R,3.96MM,STRAIGHT,SN | |
| CN805 | 3711-003942 | CONNECTOR-HEADER | BOX,2P,1R,2mm,STRAIGHT,SN | |
| CN806 | 3711-003843 | CONNECTOR-HEADER | BOX,8P,1R,2mm,STRAIGHT,SN | |
| CN806_CN841 | BN39-40001C | CBF-HARNESS | 8P,110MM,BLU/RED/WHT,UL1007 | |
| CN808 | 3722-001009 | JACK-PHONE | 3P/2C,3.6PI,AG,BLK | |
| CN809 | 3722-001009 | JACK-PHONE | 3P/2C,3.6PI,AG,BLK | |
| CN810 | 3722-001101 | JACK-USB | 4P/2C,8.38mm,AU,IVR,#22-28 | |
| CN811 | 3722-001051 | JACK-DIN | 4P,5.12mm,AU,NTR | |
| CN812 | 3722-001055 | JACK-PHONE | 5P/2C,3.6mm,AG,BLK,#16-22 | |
| CN813 | 3722-001055 | JACK-PHONE | 5P/2C,3.6mm,AG,BLK,#16-22 | |
| CN814 | 3711-003942 | CONNECTOR-HEADER | BOX,2P,1R,2mm,STRAIGHT,SN | |
| CN815 | 3711-003942 | CONNECTOR-HEADER | BOX,2P,1R,2mm,STRAIGHT,SN | |
| CN816 | 3711-000262 | CONNECTOR-HEADER | 1WALL,5P,1R,3.96mm,ANGLE,SN | |
| CN841 | 3711-003846 | CONNECTOR-HEADER | BOX,8P,1R,2mm,ANGLE,SN | |
| CN861 | 3711-001031 | CONNECTOR-HEADER | BOX,6P,1R,2.50mm,ANGLE,SN | |
| CN862 | 3711-000058 | CONNECTOR-HEADER | BOX,4P,1R,2.5mm,ANGLE,SN | |
| CN862_CN881 | BN39-40001D | CBF-HARNESS | 4P,80MM,BLU/RED/WHT,UL1007,A | |
| CN881 | 3711-000058 | CONNECTOR-HEADER | BOX,4P,1R,2.5mm,ANGLE,SN | |
| CN882 | BN39-40001F | CBF-HARNESS | 50MM,BLK,UL1015,AWG18,ST71 | |
| D801 | 0402-000016 | DIODE-RECTIFIER | UF5404,400V,3A,DO-201AD | |

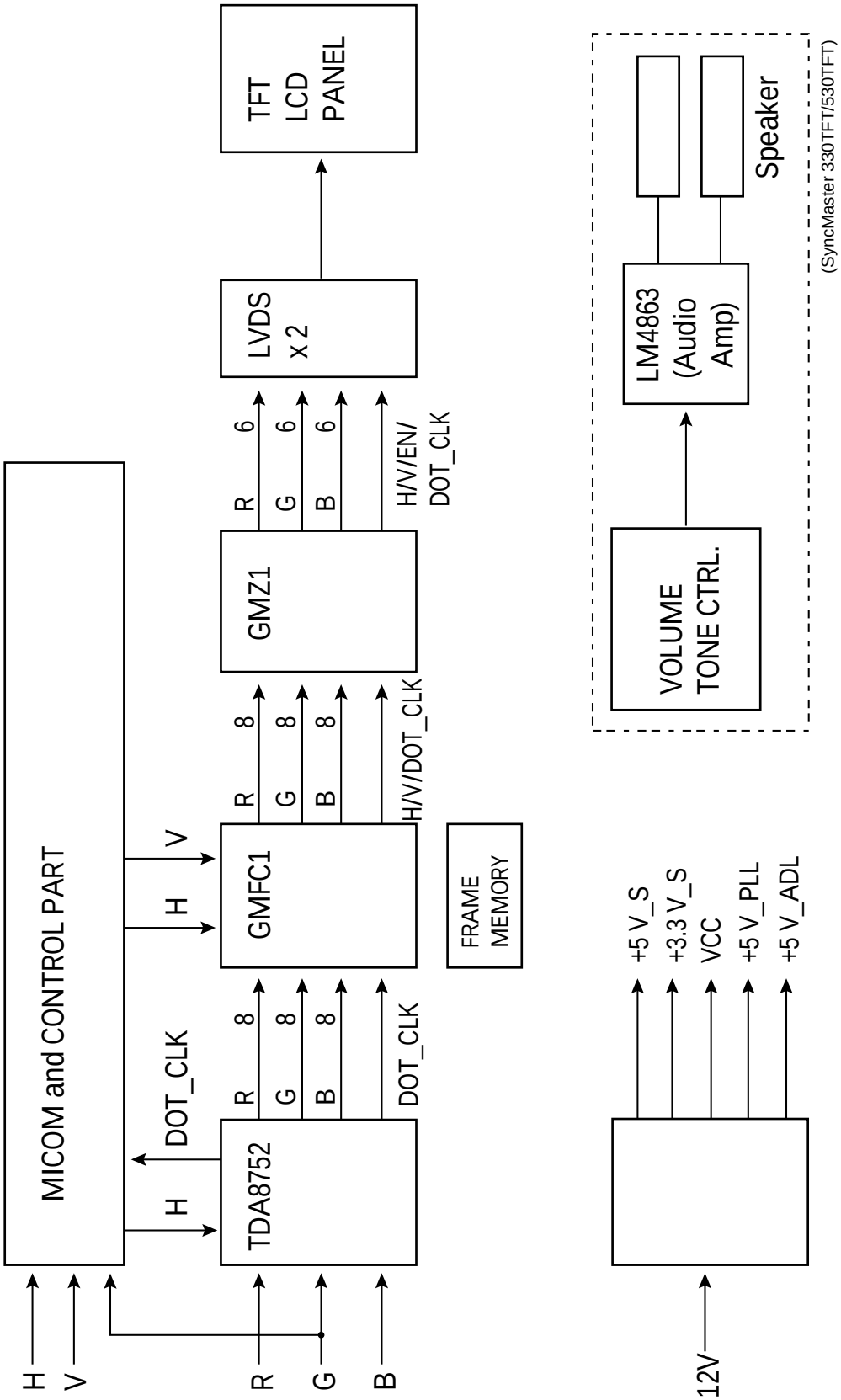
| Loc. No. | Code No. | Description | Specification | Remarks |
|---|---|---|---|---|
| D802 | 0401-000005 | DIODE-SWITCHING | 1N4148,75V,150mA,500mW,4nS,DO- | |
| IC803 | 1201-001269 | IC-AUDIO AMP | 4863,DIP,16P,300MIL,DUAL,PLA | |
| IC804 | 1203-001161 | IC-POSI.FIXED REG. | 2576,TO-220,5P,PLASTIC,4.9/5 | |
| L801 | BH27-20344D | COIL-CHOKE | 50UH,10%,DR8*8,TAPING | |
| OP881 | 0601-001036 | LED | ROUND,GRN/YEL,4.75mm,565/585nm | |
| Q802 | 0501-000586 | TR-NPN,KSC945,TO-92,EBC | 0.25W,60V,50V,5V,0.15A | |
| R809 | 2001-000464 | R-CARBON | 2.4Kohm,5%,1/6W,AA,TP,1.8x3.2m | |
| R810 | 2001-000043 | REF-CF,1K,5%,1/6W | 150V,-1300 TO +350PPM,R-AXIAL | |
| R811 | 2001-000029 | REF-CF,100,5%,1/6W | 150V,-1300 TO +350PPM/C,R-AXIAL | |
| R812 | 2001-000029 | REF-CF,100,5%,1/6W | 150V,-1300 TO +350PPM/C,R-AXIAL | |
| R813 | 2001-000067 | R-CARBON | 10Kohm,5%,1/6W,AA,TP,1.8x3.2mm | |
| R814 | 2001-000059 | R-CARBON | 5.6Kohm,5%,1/6W,AA,TP,1.8x3.2m | |
| R815 | 2001-000496 | R-CARBON | 20Kohm,5%,1/6W,AA,TP,1.8x3.2mm | |
| R816 | 2001-000484 | R-CARBON | 200Kohm,5%,1/6W,AA,TP,1.8x3.2m | |
| R817 | 2001-000029 | REF-CF,100,5%,1/6W | 150V,-1300 TO +350PPM/C,R-AXIAL | |
| R818 | 2001-000496 | R-CARBON | 20Kohm,5%,1/6W,AA,TP,1.8x3.2mm | |
| R819 | 2001-000484 | R-CARBON | 200Kohm,5%,1/6W,AA,TP,1.8x3.2m | |
| R820 | 2001-000029 | REF-CF,100,5%,1/6W | 150V,-1300 TO +350PPM/C,R-AXIAL | |
| R821 | 2001-000086 | R-CARBON | 100Kohm,5%,1/6W,AA,TP,1.8x3.2m | |
| R822 | 2001-000086 | R-CARBON | 100Kohm,5%,1/6W,AA,TP,1.8x3.2m | |
| R841 | 2001-000040 | R-CARBON | 470ohm,5%,1/6W,AA,TP,1.8x3.2mm | |
| R842 | 2001-000040 | R-CARBON | 470ohm,5%,1/6W,AA,TP,1.8x3.2mm | |
| R843 | 2001-000496 | R-CARBON | 20Kohm,5%,1/6W,AA,TP,1.8x3.2mm | |
| R844 | 2001-000496 | R-CARBON | 20Kohm,5%,1/6W,AA,TP,1.8x3.2mm | |
| R845 | 2001-000059 | R-CARBON | 5.6Kohm,5%,1/6W,AA,TP,1.8x3.2m | |
| R846 | 2001-000059 | R-CARBON | 5.6Kohm,5%,1/6W,AA,TP,1.8x3.2m | |
| R861 | 2001-000067 | R-CARBON | 10Kohm,5%,1/6W,AA,TP,1.8x3.2mm | |
| R862 | 2001-000104 | R-CARBON | 1.2Kohm,5%,1/6W,AA,TP,1.8x3.2m | |
| R863 | 2001-000104 | R-CARBON | 1.2Kohm,5%,1/6W,AA,TP,1.8x3.2m | |
| R864 | 2001-000059 | R-CARBON | 5.6Kohm,5%,1/6W,AA,TP,1.8x3.2m | |
| R865 | 2001-000069 | R-CARBON | 12Kohm,5%,1/6W,AA,TP,1.8x3.2mm | |
| R866 | 2001-000067 | R-CARBON | 10Kohm,5%,1/6W,AA,TP,1.8x3.2mm | |
| R867 | 2001-000562 | R-CARBON | 27Kohm,5%,1/6W,AA,TP,1.8x3.2mm | |
| R868 | 2001-000069 | R-CARBON | 12Kohm,5%,1/6W,AA,TP,1.8x3.2mm | |
| R869 | 2001-000051 | R-CARBON | 2.7Kohm,5%,1/6W,AA,TP,1.8x3.2m | |
| R881 | 2001-000040 | R-CARBON | 470ohm,5%,1/6W,AA,TP,1.8x3.2mm | |
| R882 | 2001-000404 | R-CARBON | 180ohm,5%,1/6W,AA,TP,1.8x3.2mm | |
| SW841 | 3403-001048 | SWITCH-PUSH | 30V,100mA,DPDT,ON-OFF | |
| SW861 | 3404-000243 | SWITCH-TACT | 15V,20mA,160gf+-50gf,6x3.4mm,S | |
| SW862 | 3404-000243 | SWITCH-TACT | 15V,20mA,160gf+-50gf,6x3.4mm,S | |
| SW863 | 3404-000243 | SWITCH-TACT | 15V,20mA,160gf+-50gf,6x3.4mm,S | |
| SW864 | 3404-000243 | SWITCH-TACT | 15V,20mA,160gf+-50gf,6x3.4mm,S | |
| SW865 | 3404-000243 | SWITCH-TACT | 15V,20mA,160gf+-50gf,6x3.4mm,S | |
| SW866 | 3404-000243 | SWITCH-TACT | 15V,20mA,160gf+-50gf,6x3.4mm,S | |
| SW881 | 3404-000243 | SWITCH-TACT | 15V,20mA,160gf+-50gf,6x3.4mm,S | |
| VR841 | 2101-001040 | VR-ROTARY | 50Kohm,20%,1/30W,SIDE | |
| VR842 | 2101-001041 | VR-ROTARY | 50Kohm,20%,1/20W,TOP | |

| Loc. No. | Code No. | Description | Specification | Remarks |
|---|---|---|---|---|
| VR843 | 2101-001041 | VR-ROTARY | 50Kohm,20%,1/20W,TOP | |
| ZD801 | 0403-000003 | DIODE-ZENER | UZ8.2BL,8.2V,7.7-8.2V,500mW,DO | |
| ZD802 | 0403-000003 | DIODE-ZENER | UZ8.2BL,8.2V,7.7-8.2V,500mW,DO | |
| ZD803 | 0403-000003 | DIODE-ZENER | UZ8.2BL,8.2V,7.7-8.2V,500mW,DO | |
| ZD861 | 0403-000003 | DIODE-ZENER | UZ8.2BL,8.2V,7.7-8.2V,500mW,DO | |
| ZD862 | 0403-000003 | DIODE-ZENER | UZ8.2BL,8.2V,7.7-8.2V,500mW,DO | |

## Others

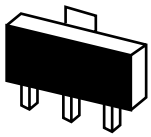
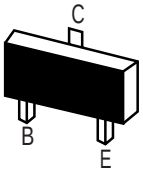
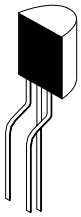
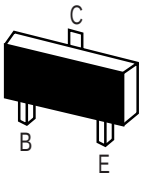
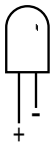
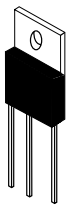
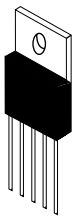
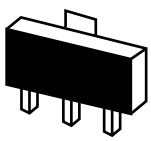
| Loc. No. | Code No. | Description | Specification | Remarks |
|---|---|---|---|---|
| LCD | BH07-10050E | LCD | LT133XM-101,303*223*13,TFT,STR | |
| | BN07-10001A | LCD | LT150X1-102,368*275*20 | |
| P/CORD | BH39-10007A | CBF POWER CORD | DET,250V/6A,H05VV-F,LP-34 | |
| | BH39-10340F | CBF POWER CORD | DET,H05VV-F,250V/10A,IV27,1830MM | |
| | BH39-10307W | CBF POWER CORD | VCTF,IVY,1830MM,N,LP-54 | |
| S/CABLE | BH39-20001A | CBF-SIGNAL | DET,2100MM,15P/26P,IVORY,UL299 | |
| SPEAKER | BN30-10001A | SPEAKER-UNIT | 1.5W,4ohm,84+-2db,500Hz,500 | |
| ADAPTOR | BN94-80001B | ASS'Y,ADAPTOR | 13.3",15" | |
| PROCESS-PBA UNIT | BN94-30001D | ASS'Y,PCB | 13.3",SAMSUNG | |
| | BN94-30001E | ASS'Y,PCB | 15",SAMSUNG | |
| | BN94-30001H | ASS'Y,PCB | MCF3811TA,SIEMENS | |
| B/D ASS'Y CODE | BN98-10001E | ASS'Y,PCB/MAIN | 13.3",SAMSUNG | |
| | BN98-10001F | ASS'Y,PCB/MAIN | 15",SAMSUNG | |
| | BN98-10001J | ASS'Y,PCB/MAIN | MCF3811TA,SIEMENS | |
| | BN98-90001D | ASS'Y,PCB/MISC | 13.3",15",SAMSUNG | |

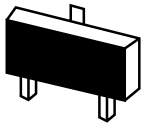
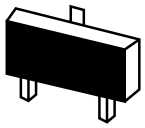
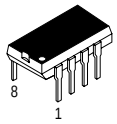
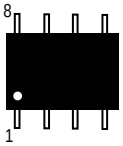
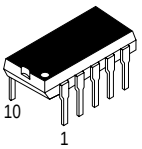
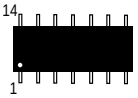
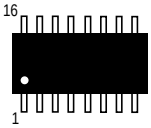
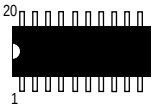
# 8 Block Diagram

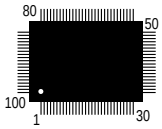
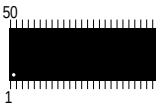
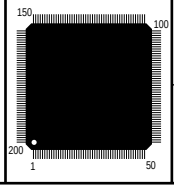


# Memo

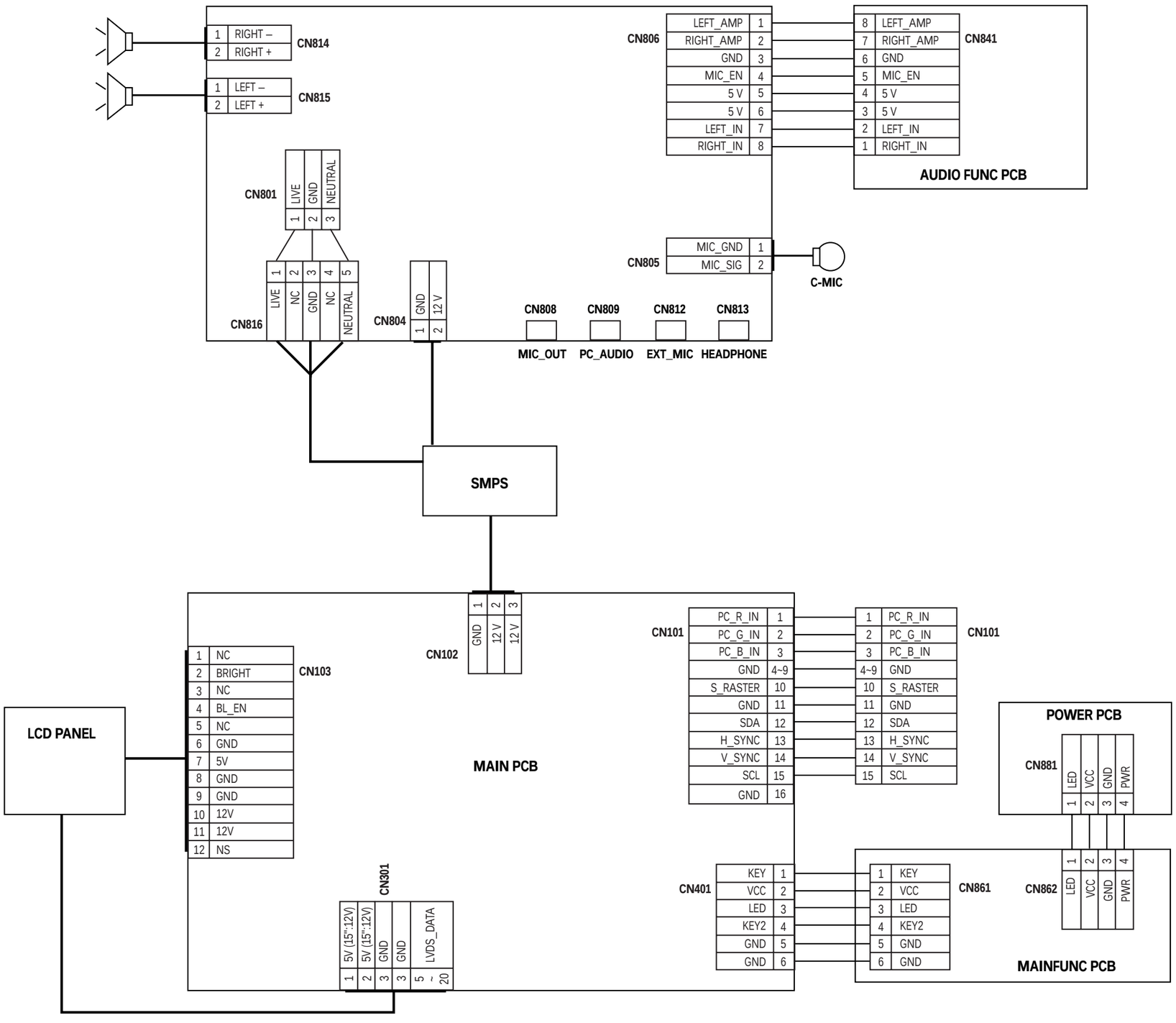
## 10-2 Semiconductor Lead Identification

| PARTS | TYPE NO. | REF. NO. |
|---|---|---|
|  | 431 | D115 |
|  | KSC1623 | Q301, Q302, Q401 |
|  | KSC945 | Q801, Q802 |
|  | KSR2101 | Q101 |
|  | LED | OP881 |
|  | KA7805 | IC102, IC103, IC109 |
|  | LM2576 | IC805 |
|  | 7045 | IC402 |

| PARTS | TYPE NO. | REF. NO. |
|---|---|---|
|  | BZX84C5V1 | ZD101, ZD102, ZD103, ZD104, ZD105, ZD401 |
|  | MMBD4148 | D101, D102, D103, D104, D105, D106, D109, D110, D401, D402, D403, D404 |
|  | 24LC08B | IC404 |
| | 24LC211 | IC403 |
|  | S19933ADY-T1 | IC309 |
| | LM1881M | IC104 |
|  | LM2596 | IC107, IC108 |
| | LM2596S | IC804 |
|  | 74F14 | IC105 |
| | 74F125 | IC106 |
| | LM4863 | IC803 |
|  | MC34067P | IC110 |
| | MC141544-DWR2 | IC307- |
|  | 74FCT244 | IC306 |
| | 74FCT573M | IC308 |

| PARTS | TYPE NO. | REF. NO. | PARTS | TYPE NO. | REF. NO. |
|---|---|---|---|---|---|
| | DS90CF561 | IC310, IC311 |  | TDA8752 | IC101 |
|  | 416S1020B | IC302, IC303, IC304 |  | GMFC1 | IC301 |
| | | | | GMZ1 | IC305 |

# 11 Wiring Diagram



# 12 Schematic Diagrams

## 12-1 DAC & IO Part Schematic Diagram

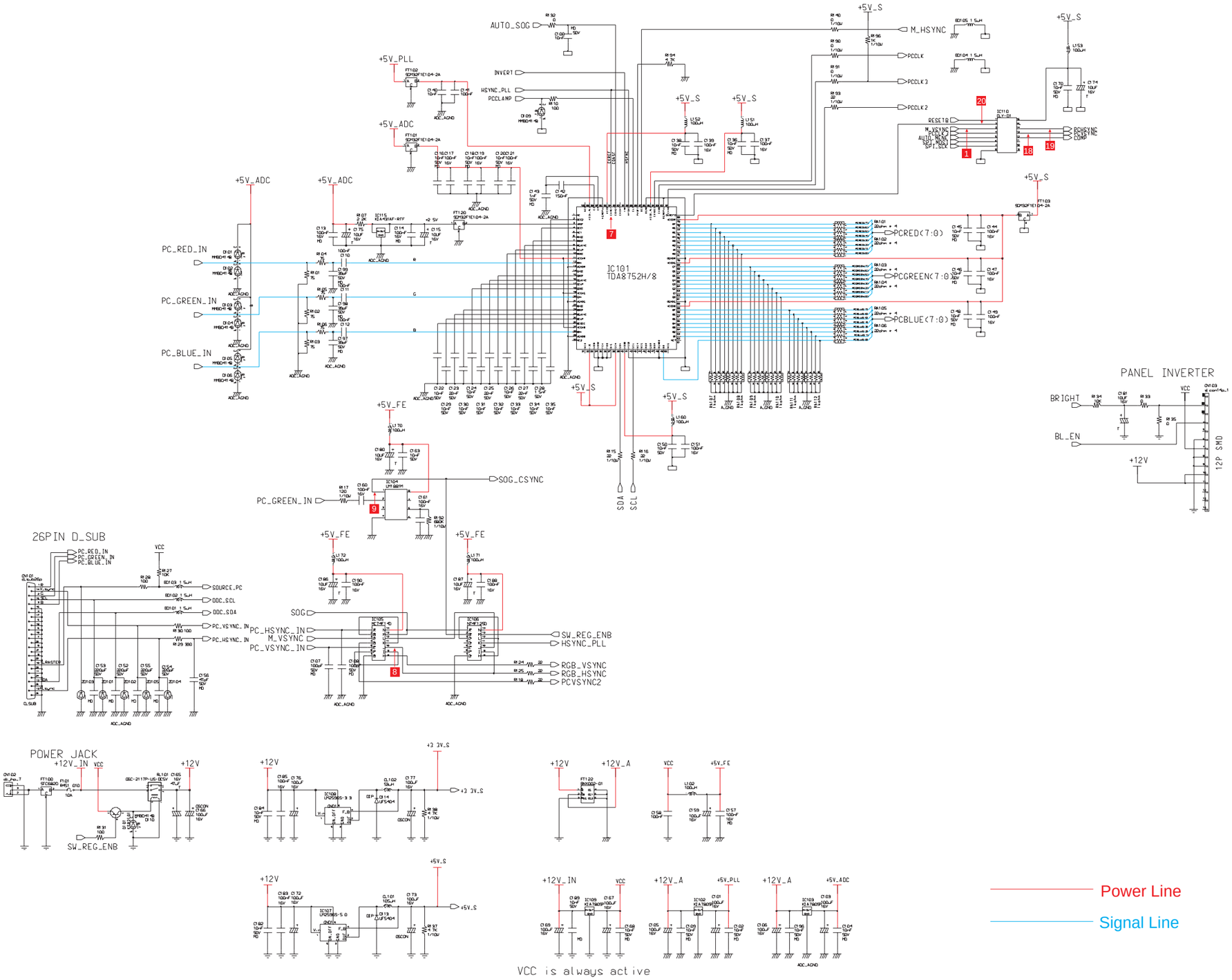


**Table 12-1. IC102**

| pin # | MODES |
|---|---|
| | 1024 x 768 / 85 Hz |
| 1 | 12 |
| 2 | GND |
| 3 | 5 |

**Unit: Vrms**

**Table 12-2. IC103**

| pin # | MODES |
|---|---|
| | 1024 x 768 / 85 Hz |
| 1 | 12 |
| 2 | GND |
| 3 | 5 |

**Unit: Vrms**

**Table 12-3. IC107**

| pin # | MODES |
|---|---|
| | 1024 x 768 / 85 Hz |
| 1 | 12 |
| 2 | 5 |
| 3 | GND |
| 4 | 5 |
| 5 | GND |

**Unit: Vrms**

**Table 12-4. IC108**

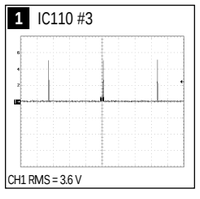
| pin # | MODES |
|---|---|
| | 1024 x 768 / 85 Hz |
| 1 | 12 |
| 2 | 3.3 |
| 3 | GND |
| 4 | 3.3 |
| 5 | GND |

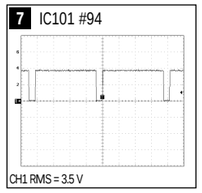
**Unit: Vrms**

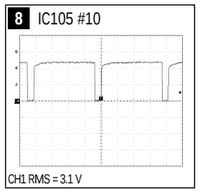
**Table 12-5. IC109**

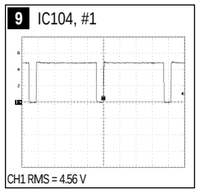
| pin # | MODES |
|---|---|
| | 1024 x 768 / 85 Hz |
| 1 | 12 |
| 2 | GND |
| 3 | 5 |

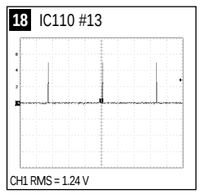
**Unit: Vrms**

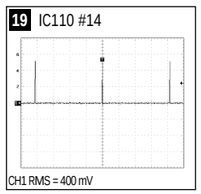


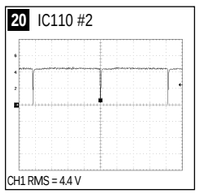



## 12-2 ZOOM & FRC Part Schematic Diagram

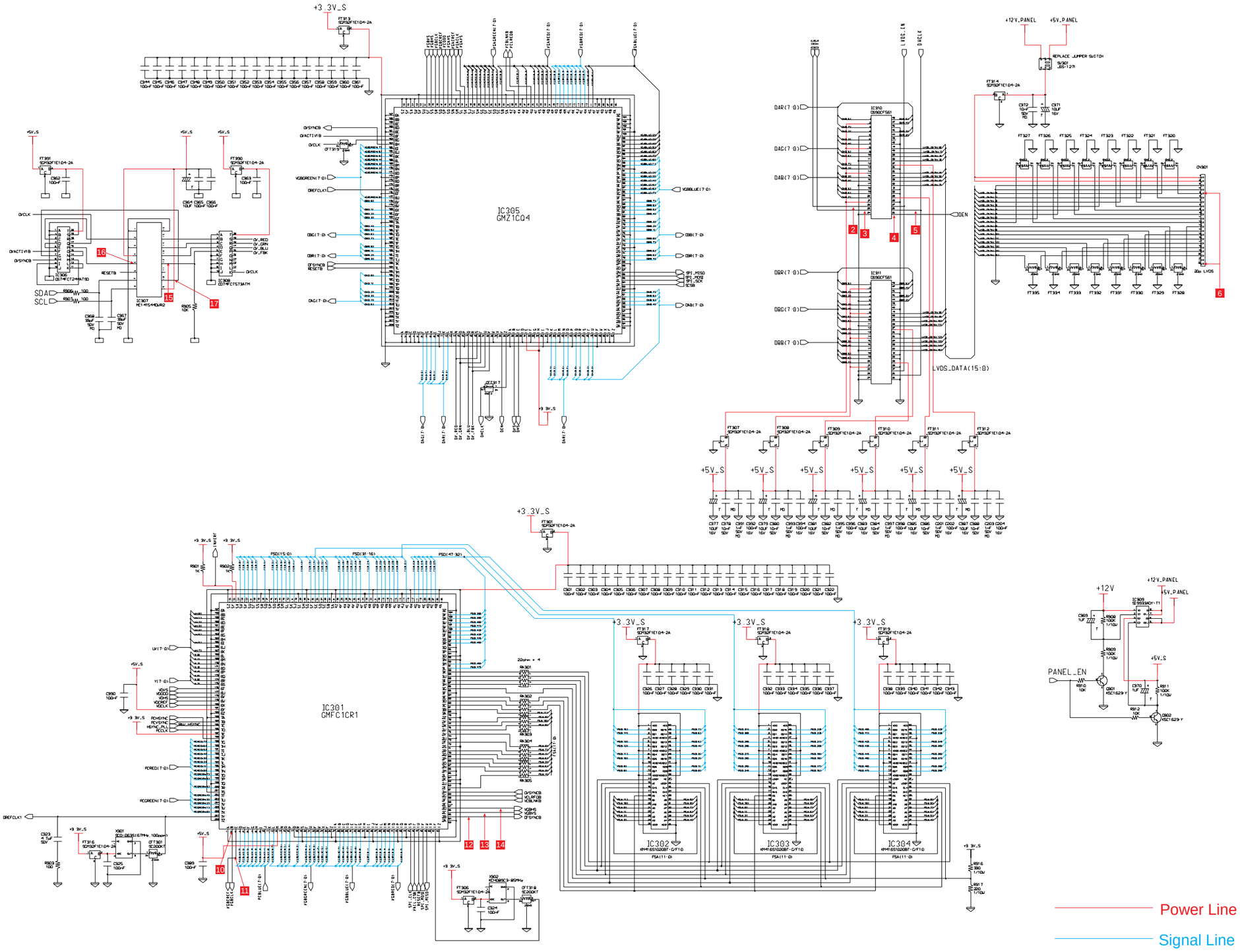
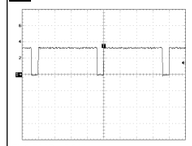


**Table 12-6. IC309**

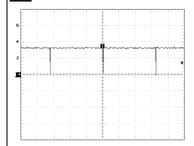
| pin # | MODES |
|---|---|
| | 1024 x 768 / 85 Hz |
| 1 | 11.96 |
| 2 | 5.90 |
| 3 | 4.99 |
| 4 | 5.8 mV |
| 5 | 4.99 |
| 6 | 4.99 |
| 7 | 11.95 |
| 8 | 11.95 |

**Unit: Vrms**

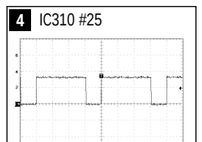
**2** IC310 #22



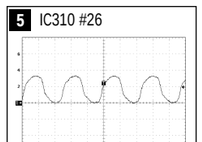

**3** IC310 #23



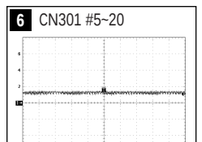

**4** IC310 #25



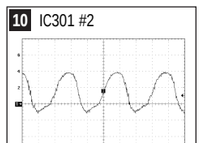

**5** IC310 #26



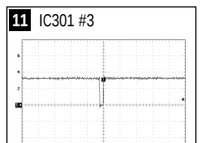

**6** CN301 #5~20



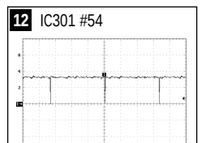

**10** IC301 #2



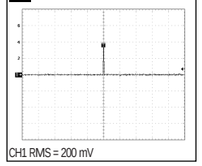

**11** IC301 #3



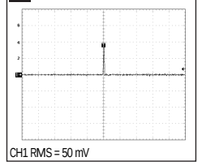

**12** IC301 #54



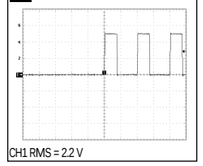

**13** IC301, #55



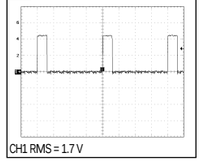

**14** IC301 #56



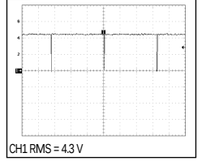

**15** IC307 #12




**16** IC307 #5




**17** IC307 #10



# 12-3 Micom Part Schematic Diagram

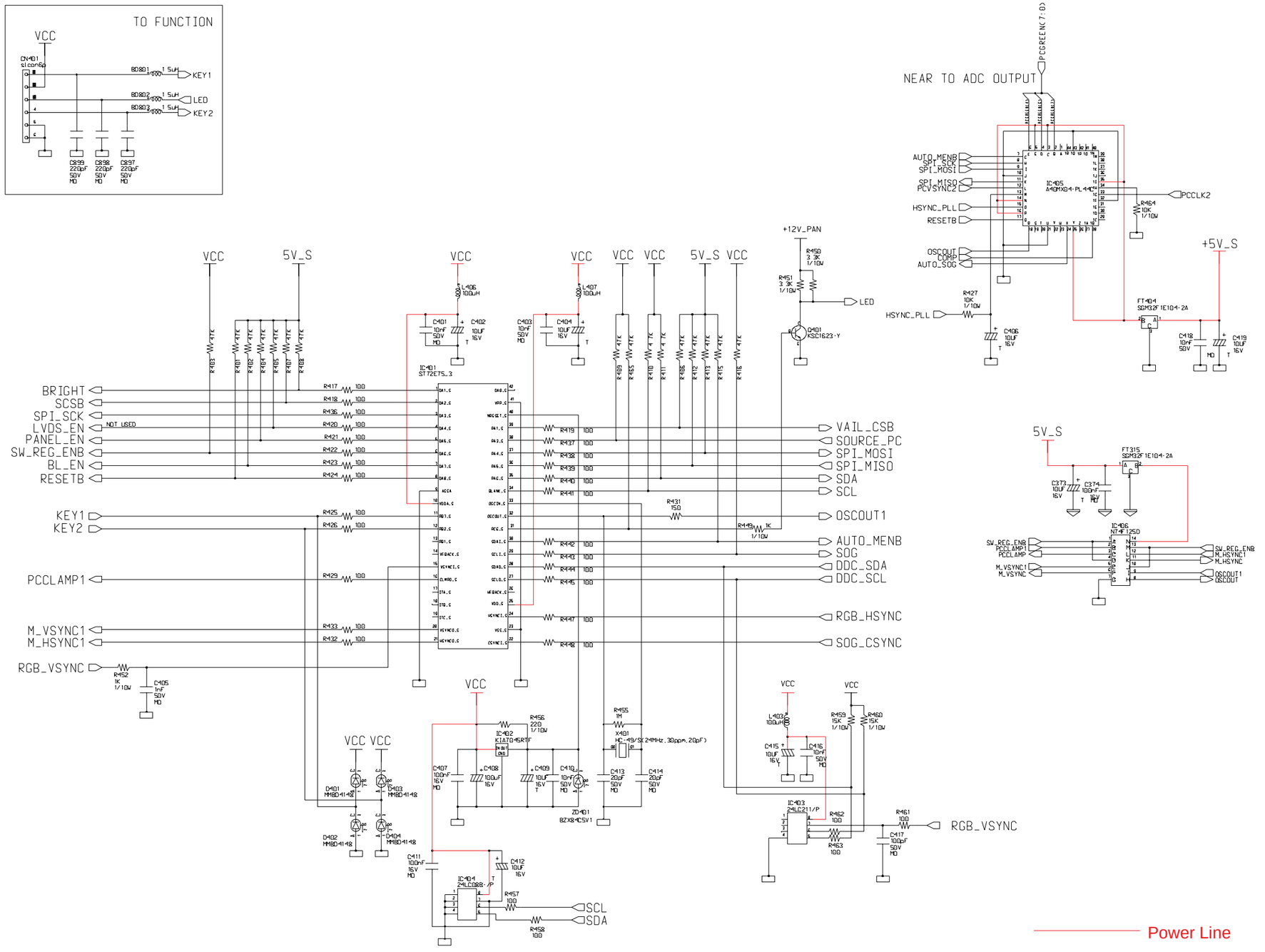



**Table 12-7. IC401**

| pin # | MODES | pin # | MODES |
|---|---|---|---|
| | 1024 x 768 / 85 Hz | | 1024 x 768 / 85 Hz |
| 1 | 59.8 mV | 22 | 3.44 |
| 2 | 5 | 23 | GND |
| 3 | 5 | 24 | 4.16 |
| 4 | 5 | 25 | 5.01 |
| 5 | 4.62 | 26 | 4.97 |
| 6 | 0.457 | 27 | 4.46 |
| 7 | 4.91 | 28 | 4.43 |
| 8 | 5 | 29 | 4.78 |
| 9 | GND | 30 | 4.77 |
| 10 | 5.03 | 31 | 14.07 |
| 11 | 5.02 | 32 | 2.226 |
| 12 | 5.02 | 33 | 2.238 |
| 13 | NC | 34 | 5.03 |
| 14 | NC | 35 | 5.03 |
| 15 | 4.94 | 36 | 4.96 |
| 16 | 93.7 mV | 37 | 4.96 |
| 17 | 3.217 | 38 | 52.7 mV |
| 18 | 4.97 | 39 | 4.96 |
| 19 | 5.01 | 40 | 4.87 |
| 20 | 63.0 mV | 41 | GND |
| 21 | 0.476 | 42 | 9.7 mV |

**Unit: Vrms**

**Table 12-8. IC403**

| pin # | MODES |
|---|---|
| | 1024 x 768 / 85 Hz |
| 1 | NC |
| 2 | NC |
| 3 | NC |
| 4 | GND |
| 5 | 4.43 |
| 6 | 4.46 |
| 7 | 4.87 |
| 8 | 5.03 |

**Unit: Vrms**

**Table 12-9. IC404**

| pin # | MODES |
|---|---|
| | 1024 x 768 / 85 Hz |
| 1 | GND |
| 2 | GND |
| 3 | GND |
| 4 | GND |
| 5 | 5.03 |
| 6 | 5.03 |
| 7 | GND |
| 8 | 5.03 |

**Unit: Vrms**

## 12-4 Sub Part Schematic Diagram

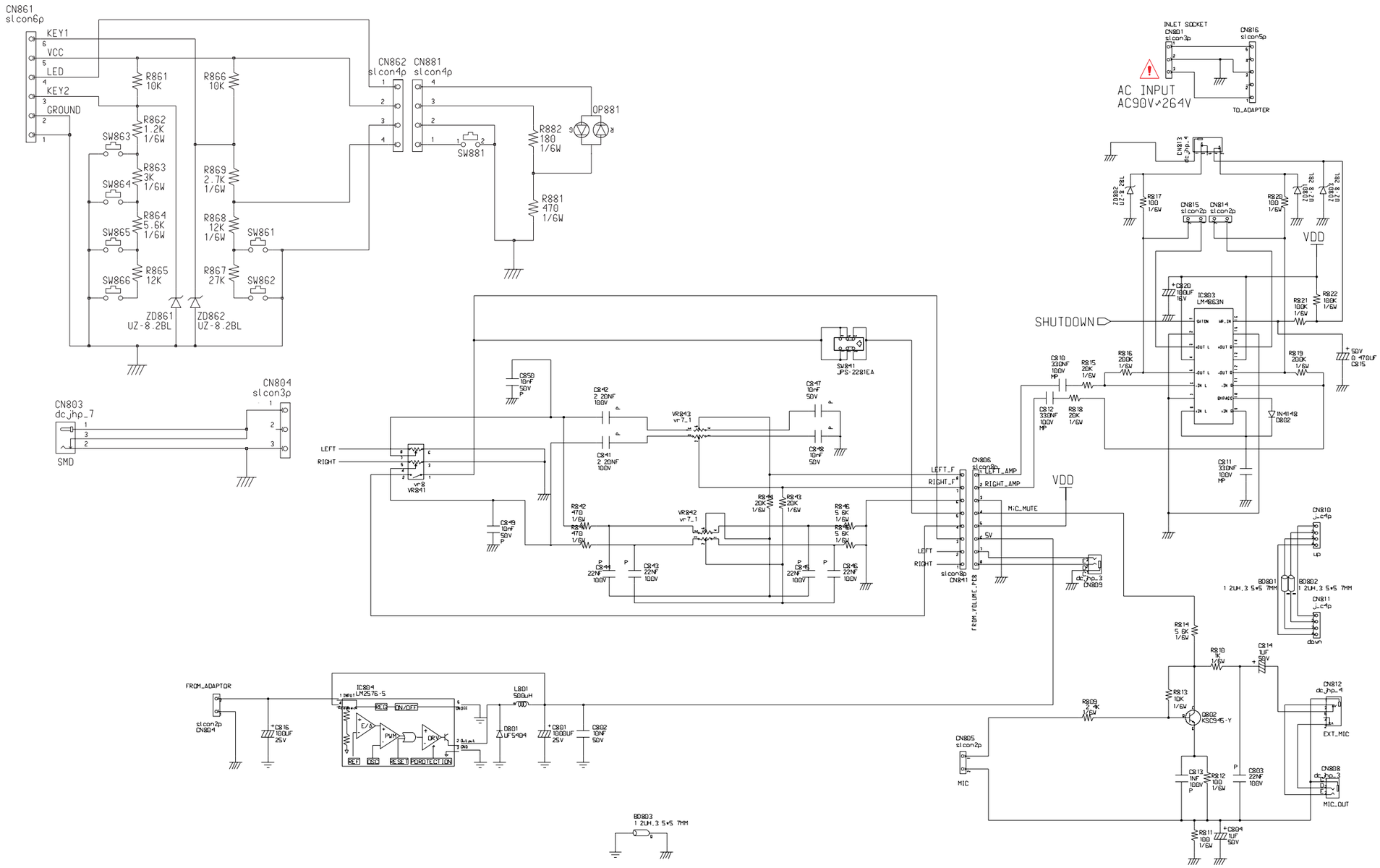



**Table 12-10. IC803**

| pin # | MODES |
|---|---|
| | 1024 x 768 / 85 Hz |
| 1 | GND |
| 2 | GND |
| 3 | Signal (+2.5 V Bias) |
| 4 | 5 |
| 5 | Signal (+2.5 V Bias) |
| 6 | Input Signal (+2.5 V Bias) |
| 7 | GND |
| 8 | 2.5 |
| 9 | 2.5 |
| 10 | 2.5 |
| 11 | Input Signal (+2.5 V Bias) |
| 12 | Signal (+2.5 V Bias) |
| 13 | 5 |
| 14 | Signal (+2.5 V Bias) |
| 15 | GND |
| 16 | 2.5 V (Headphone : 5 V) |

**Unit: Vrms**

## Memo